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JARA-SHARIRAM 2021

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PROCEEDING OF INTERNATIONAL CONFERENCE

on 19 & 20 November 2021

Theme- Geriatric Diseases-Care and Cure to Celebrate

आज़ादी का अमृत महोत्सव

WORLD AYURVEDA DAY - 2021

jointly organized by

Gujrat Board of Ayurvedic & Unani System of Medicine & Parul University

JARA-SHARIRAM 2021

Organized by : Department of Rachana Sharir,
Parul Institute of Ayurved, Parul University.

PROCEEDINGS OF INTERNATIONAL CONFERENCE

THEME-GERIATRIC DISEASES-CARE AND CURE

JARA-SHARIRAM-2021

ORGANIZED BY:

DEPARTMENT OF RACHANA SHARIR, PARUL INSTITUTE OF AYURVEDA, PARUL UNIVERSITY

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FOREWORD

I feel honoured to be requested to write the foreword for this excellent work as special add on by the efforts from the Department of Rachana Sharira on conducting Pre International conference Jara Shariram 2021 under Azadi ka Amrut Mahotsav on 21/10/2021 presiding eminent guest speakers.

I am indeed happy to write a foreword to the book which is combined efforts from the department of Rachana Sharira. It has taken a herculean task to compile this book after referring voluminous literature of past and present with reference to Geriatric practice: cure and care by the scholars. This is a genuine work compiling original references by the authors from Ayurveda and contemporary sciences. The resources provide comprehensive knowledge about the subject prepared in accordance with the diseases, drugs involved and its etiopathogenesis. Ayurvedic system of medicine has been practiced in the country and globally from time immemorial and has stood the test of many adversities over centuries.

This book of proceedimgs on Rachana Sharira will be a timely contribution to students, practitioners, scholars and researchers of ayurvedic medicine. The purpose of this book will be served by the progressive discussions and constructive feedbacks from the readers. I am sure the readers will be benefited immensely by this book. I wish the department to get more such opportunities to convert such intricate subject into an interesting and readable one.

Dr. Geetika Patel
MBBS, M.D.
Medical Director,
Parul Sevashram Hospital
Trustee,Parul University

REPORT

JARA SHARIRAM was organized on 21st October 2021; in coordination with Gujarat Board of Ayurvedic and Unani system of Medicine and Parul University.

Committee formed for JARA SHARIRAM pre conference webinar

Chief Patron –

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Dr Bhagwan G Kulkarni, Principal, Parul Institute of Ayurved and Research, Parul University

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Dr Nirav Patel, Assistant Professor Rachana Sharira Department PIA, PU

Souvenir Committee coordinator –

Dr Ravi Joshi. Assistant Professor Rachana Sharira Department PIAR, PU

Dr Kishan Singh, Assistant Professor Rachana Sharira Department PIA, PU

On 21/10/2021; The Inauguration started online on **– *https://meet.google.com/nzh-vfwn-rsp*** - at 9:30 *am* **the event was telecasted on Facebook and YouTube as –**

Facebook Link- https://www.facebook.com/parulinstituteofayurveda/live/ =views- 180

Youtube Link- https://www,youtube.com/user/drhemantt/videos/ = views- 385

The technical coordination was done by Dr Harish Daga, Asst Professor, Shalyatantra Dept., PIA

Program coordinated by Dr Kishan Singh, Asst Professor, RS dept., PIA

After giving the introduction, starts with Dhanwantri prayer by Dr Dharaben Patel, PG 1st year RS Scholar, PIA

For JARA-SHARIRAM, words of Blessing done by Dr Hemant Toshikhane, Dean, Faculty of Ayurved, PU

And by Dr Bhagwan G. Kulkarni, Principal PIAR, PU.

After having words by HOI's, Introduction of program was done by Dr Dattu Bandapalle, HOD, Rachana sharira department, PIA. Then Schedule of program was explained by Dr Nirav Patel, Asst. Professor, RS dept., PIA. Again the Blessing words given by Dr Manoj Jagtap, Associate Professor, YMT Ayurvedic College. Mumbai, Maharashtra. Followed by Dr Rakesh Sharma, Associate Professor, Dr Sarvepalli Radhakrishann Rajasthan Ayurved University, Jodhpur. Rajasthan. The Guest speaker gave best complements to the organizers for conducting JARA-SHARIRAM. Lastly, the Vote of thanks done by Dr Akashdeep Arun Meshram, Professor, RS dept., PIA

After ending the inauguration program, first guest lecture starts. Dr Nimesh Sangode procceds brief introduction of Dr Manoj Jagtap, Associate Professor, YMT Ayurvedic College, Mumbai, Maharashtra.

The guest speaker discussed on the topic scope of Rachana Sharira in Geriatrics care and cure.

After first guest lecture, 2nd Guest lecture starts with brief introction by Dr Ravi Joshi.

2nd guest speaker was Dr Rakesh Sharma, Associate Professor, Dr Sarvepalli Radhakrishann Rajasthan Ayurved University, Jodhpur. Rajasthan. The topic was Scope of Rachana Sharira in Geriatrics care and cure research oriented.

After the two lectures the event was further continued after lunch for paper presentations online in three different groups as Charak, Sushruta and Vagbhat. Total paper presentations are as follows including the coordinator and judges for the event.

Total presentations in the events were 17+5+13 i.e., accordingly Charak, Sushruta and Vagbhat group. Total 35 paper presentations done by online GOOGLE MEET.

Charak group- https://meet.google.com/owj-xviy-eow

Coordinator- Dr Ajitkumar S. Wahane

Judges-

1. Dr Yogeshwar Deshpande, R.T. Ayurvedic Mahavidyalya, Akola. Maharashtra

2. Dr Sachin Bhagwat, CSMSS Ayurvedic College Aurangabad, Maharashtra.

Sr No	Name of Participant	Name of College	Designation
1	Dr Divya Deepak Varma	Osmanabad	Pg student
2	Dr. Sangeeta Gorakshanath Kanade	Osmanabad	Pg student
3	Dr. Bhairavi Ravindra Deshmukh	Nagpur	Pg student
4	Dr Sruthi K	Nanded	Pg student
5	Dr Ajinkya Umaji Bondre	Nagpur	Pg student
6	Dr Rutuja P. Powar	Kodoli	Pg student
7	Dr Snehal Shivaji Jadhav	Osmanabad,	Pg student
8	Dr Rabiya S	Nagpur	Pg student
9	Dr Anagha Gaitonde	Kodoli	Pg student
10	Dr Aashik	Gujarat	Pg student
11	Dr Himanshu	Gujarat	Pg student
12	Dr Sujata Rathod	Gujarat	Pg student
13	Dr Manila	Gujarat	Pg student
14	Dr Geetanjali	Gujarat	Pg student
15	Dr Kavita Singh	Gujarat	Pg student
16	Dr Saurabh	Gujarat	Pg student
17	Dr Anu	Gujarat	Pg student

Total presenters were 17.

Sushruta group- https://meet.google.com/zez-kbbx-csy

Coordinator and Judge– Dr Nimesh Sangode, Associate Professor, RS Dept, PIAR

External Judge - Dr Abhijeet Patil, Principal, Professor Rachana Sharira Department, Ram Krishna Ayurved college, RKDF University Bhopal. MP

Sr no	Name of participants	Place	Designation
1	DR ASHWINI KUMAR KUSHWAHA	VARANASI	FACULTY
2	DR SUBHANGINI WARATKAR	NAGPUR	PRACTIONER
3	DR TRIDEV ARUN PATIL	NASHIK	FACULTY
4	DR SWAPNIL SUHAS CHAUDHARI	GUJARAT	FACULTY
5	DR SAKSHI WAGHAMARE	MAHARASHTRA	FACULTY

Total presenter were 5

VAGBHAT GROUP- https://meet.google.com/ifd-xkdp-wwj

Coordinator and Judge - Dr Ravi Joshi

JUDGE- Dr Umesh Yelne. Associate professor , GAC, Vadodara,

Sr No	Name of participant	place	Designation
1	Dr Santosh motiram rathod	Osamanabad	Pg student
2	Dr Jinu k Mathew	Raipur	Pg student
3	Dr Vishnukant Rameshrao Jadhav	Nanded	Pg student
4	Dr Aishwarya Inderjeet Bhise	Nanded	Pg student
5	Dr Sharayu B. Balkhande	Nagpur	Pg student
6	Dr T.U. Aravinth	chennai	Pg student
7	Dr Shital Sanjiv Swami	Nanded	Pg student
8	Dr Priyanka Waghmare	Nagpur	Pg student
9	Dr kanika Gupta	Daudhar punjab	Pg student
10	Dr Aditya Karve	Gujarat	Pg student
11	Dr Tanmay Adhikari	Gujarat	Pg student
12	Dr Drashti Patel	Gujarat	Pg student
13	Dr Priyanka Nirwal	Maharashtra	Pg student

Total presenters were 13.

The event was pre-declared two months earlier and registrations were announced. In total 48 candidates done registrations. Due guidelines for the paper presentation format and article writing format were notified to all the candidates through proper mail.

The event results declared after 2-3 days of JARA-SHARIRAM.

The due certificates for all the delegates, paper presenters, External-Internal Judge and guest speakers are arranged with online registration on google form and certificates will be formally distributed.

Submitting this report with gratitude towards the managing committee, The Dean Faculty of Ayurveda, Principal, PIAR, PU.

CONTENTS

ROLE OF RACHANA SHARIR IN GERIATRICS- CARE & CURE

***VD. MANOJ JAGTAP**

Associate Professor, Rachana Sharir Vibhag,

YMT AMC, Kharghar

****VD. JYOTI JAGTAP**

Associate Professor, Swasthavritta Vibhag,

YMT AMC, Kharghar

Abstract:- Geriatrics is the branch of medicine concerned with the diagnosis, treatment and prevention of disease in older people and the problems specific to aging. Geriatric word is derived from greek word Geron (old man) +iatrea (treatment). India's elderly population (aged 60 and above) is projected to touch 194 million in 2031 from 138 million in 2021, a 41 per cent increase over a decade, according to the National Statistical Office (NSO)'s Elderly in India 2021. Aging shows multiple effects on body and systems. Aging is unavoidable but researches are focused on to delay or reduce effects of aging. In ayurveda old age is called as Jara. Jara is condition where all dosha and dhatu are declined stage except Vata dosha. Rasayan is branch of ayurveda which deals with delaying and reducing effects of aging. Regular following Dincharya, Achar rasayan and yogabhyas will help in geriatric conditions.

Keywords :- Aging, Dincharya, Geriatrics, Jara, Rasayan.

Introduction-

Geriatrics is the branch of medicine concerned with the diagnosis, treatment and prevention of disease in older people and the problems specific to aging. Geriatric word is derived from greek word Geron (old man) +iatrea

(treatment). India's elderly population (aged 60 and above) is projected to touch 194 million in 2031 from 138 million in 2021, a 41 per cent increase over a decade, according to the National Statistical Office (NSO)'s Elderly in India 2021. The report noted a significant increase in the old-age dependency ratio, which rose from 10.9 per cent in 1961 to 14.2 per cent in 2011 and is projected to increase to 15.7 per cent and 20.1 per cent in 2021 and 2031, respectively. The old-age dependency ratio is defined as the number of persons aged 60+ per 100 persons relative to the age group 15-59. The main factor responsible is the increase in life expectancy. The study, published in the Lancet journal, noted that life expectancy in India has risen from 59.6 years in 1990 to 70.8 years in 2019. There are many theories regarding aging. Some are Programmed aging theories say that people are designed to age and that our cells have a predetermined lifespan that's encoded into our bodies. On the other hand there are Error theories, or damage theories. They hypothesize that aging is caused by cellular changes that are random and unplanned. This study will focus on geriatric changes in various body systems and how these aging effects can be reduced with help of Ayurveda medicines and lifestyle modification.

Materials & Methods– This is a review article. Literature survey regarding changes in body as per aging was done. From Ayurvedic literature concept of aging, changes in geriatrics were compiled.

Discussion– Effects of Aging on various body systems as follows

Bones and Joints- Bones tend to become less dense. Moderate loss of bone density is termed osteopenia and severe loss of bone density (including occurrence of a fracture due to loss of bone density) is osteoporosis .

The cartilage that lines the joints tends to thin, partly because of the wear and tear of years of movement. The surfaces of a joint may not slide over each other as well as they used to, and the joint may be slightly more susceptible to injury. Damage to the cartilage due to lifelong use of joints or repeated injury often leads to osteoarthritis

Muscles and Body Fat- The amount of muscle tissue (muscle mass) and muscle strength tend to decrease beginning around age 30 and continuing

throughout life. Some of the decrease is caused by physical inactivity and decreasing levels of growth hormone and testosterone.

By age 75, the percentage of body fat typically doubles compared with what it was during young adulthood. Too much body fat can increase the risk of health problems.

Eyes- The lens stiffens, making focusing on close objects harder.

The lens becomes denser, making seeing in dim light harder.

The pupil reacts more slowly to changes in light.

The lens yellows, changing the way colors are perceived.

The number of nerve cells decrease, impairing depth perception.

The eyes produce less fluid, making them feel dry.

Ears- Most changes in hearing are probably due as much to noise exposure as to aging. Exposure to loud noise over time damages the ear's ability to hear.

Many older people have more trouble hearing in loud places or in groups because of the background noise. Also, earwax, which interferes with hearing, tends to accumulate more.

Thick hairs may grow out of the ears.

Mouth and Nose- As people age, taste buds on the tongue decrease in sensitivity. This change affects tasting sweet and salt more than bitter and sour. The ability to smell diminishes because the lining of the nose becomes thinner and drier and the nerve endings in the nose deteriorate.

The mouth tends to feel dry more often, partly because less saliva is produced. Dry mouth further reduces the ability to taste food.

As people age, the gums recede slightly. Consequently, the lower parts of the teeth are exposed to food particles and bacteria. Also, tooth enamel tends to wear away. These changes, as well as a dry mouth, make the teeth more susceptible to decay and cavities (caries) and thus make tooth loss more likely

Skin- The skin tends to become thinner, less elastic, drier, and finely wrinkled.

The skin changes partly because collagen (a tough, fibrous tissue that makes skin strong) and elastin (which makes skin flexible) become chemically changed and less flexible; also, the aging body produces less collagen and elastin.

The fat layer under the skin thins.

The number of nerve endings in the skin decreases. As a result, people become less sensitive to pain, temperature, and pressure, and injuries may be more likely.

Brain and Nervous System- As cells are lost, new connections are made between the remaining nerve cells.

New nerve cells may form in some areas of the brain, even during old age.

The brain has more cells than it needs to do most activities—a characteristic called redundancy.

Some mental functions—such as vocabulary, short-term memory, the ability to learn new material, and the ability to recall words—may be subtly reduced after age 70.

Heart and Blood Vessels - The heart and blood vessels become stiffer. The heart fills with blood more slowly. The stiffer arteries are less able to expand when more blood is pumped through them. Thus, blood pressure tends to increase.

An older heart cannot speed up as quickly or pump as fast or as much blood as a younger heart.

Lungs and the Muscles of Breathing - The muscles used in breathing, the diaphragm and muscles between the ribs, tend to weaken. The number of air sacs (alveoli) and capillaries in the lungs decreases. Thus, slightly less oxygen is absorbed from air that is breathed in. The lungs become less elastic.

The lungs become less able to fight infection, partly because the cells that sweep debris containing microorganisms out of the airways are less able to do so. Cough, which also helps clear the lungs, tends to be weaker.

Kidneys and Urinary Tract - The kidneys tend to become smaller because the number of cells decreases.

The maximum volume of urine that the bladder can hold decreases. Thus, older people may need to urinate more often.

The bladder muscles may contract unpredictably (become overactive), regardless of whether people need to urinate.

The bladder muscles weaken. As a result, they cannot empty the bladder as well, and more urine is left in the bladder after urination.

The muscle that controls the passage of urine out of the body (urinary sphincter) is less able to close tightly and prevent leakage. Thus, older people have more difficulty postponing urination

Reproductive Organs–

Women

The decrease in female hormone levels causes the ovaries and uterus to shrink. The tissues of the vagina become thinner, drier, and less elastic

The breasts become less firm and more fibrous, and they tend to sag. These changes make finding lumps in the breasts more difficult.

Men

Levels of the male hormone testosterone decrease, resulting in fewer sperm and a decreased sex drive (libido)

Ayurveda perspective of Geriatrics –

Monier Williams

jara m. the act of wearing out, wasting

jarā a f. the act of becoming old, old age.

According to ayurveda there are 3 stages of life – Baal, Madhya and Vriddha. Vriddha avastha is also known as Jara avastha. This is dominated by Vata dosha and all remaining dosha, dhatus and mala are in declined phase.

Daily following of Dinacharya and ritucharya we can delay and reduce effects of aging. For maintaining physical and mental health Yoga and Pranayam are helpful. Also the Achar Rasayan is very helpful for reduction of stress.

In this way with help of Ayurveda we can have healthy and happy long life.

Conclusion- this was a literature review study. After comparison of aging effects according to modern science and ayurveda we can conclude that:-

- Aging shows various effects on body.
- These changes are unavoidable but can be delayed with ayurveda.
- Following daily practices of Abhyanga, Nasya, Murdhi Tailam, Udvartan etc can delay aging.
- Achar Rasayan helps in reduction of mental stress.

***

SCOPE OF RACHANA-SHARIR IN GERIATRIC CARE & CURE (RESEARCH ORIENTED)

DR. RAKESH KUMAR SHARMA

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Abstract:- Rachana Shaarir is the base of all the streams of medical sciences. In Ayurved also Acharyas have given due importance to Shaarir. All the Acharyas have described Shaarir (Rachana Shaarir & Kriya Shaarir) in detail separately in the Shaarir Sthana (Volume related to Shaarir) in the texts viz. Sushruta Samhita, Charaka Samhita etc. authored by them. Ayurvediya Shaarir incorporates not only the physical aspect of human body but it includes the spiritual aspect of human body also.

As the time advanced, newer researches and studies kept on growing the knowledge accordingly. Various new concepts and theories have developed and elaborated. Marma Shaarir, Nadi Shaarir, Shad Chakra Shaarir, Yoga Shaarir are the new dimensions of Shaarir which have attracted the attention of medical sciences in the recent era. Jara Shaarir or Geriatrics is also a new theory which has attracted the attention of medical fraternity in contemporary time.

Jara Shaarir or Geriatrics is the study of old age people. It deals with the age and health related changes and care in the old age people. In this

publication we will discuss about Jara and Research Methodology regarding Jara Shaarir.

Keywords- Jara, Geriatrics, Research Methodology, Ageing, Rasayana, Free Radicals, Anti-oxidants, Dhatukshaya, Metabolism, Reactive Oxygen Species.

In Ayurved, Sharir has been explained in different ways as following:

- शीर्यते इति शरीरम्।

  That which undergoes regular the regular process of deterioration or destruction is named as Sharir.

- पंचमहाभूत शरीरि समवायः पुरुषः। स एषः कर्मपुरुषः चिकित्साधिकृतः।
- तत्र शरीरं नाम चेतनाधिष्ठानभूतं पंचमहाभूतविकार समुदायात्मकं समयोगवाहि। (च.शा. 5)

  Both these excerpts mean that Sharir is the amalgam of Pancha Mahabhutas (Five basic elements) and Aatma (soul). It is named as Karma Purusha and Chikitsya Purusha.

- दोषधातुमलं मूलं हि शरीरम्।

  It means that Sharir depends completely on the well being of Doshas, Dhatus and Malas.

- सत्वात्मा शरीरं च त्रयमेतत् त्रिदण्डवत्। (च.सू. 1/46)

  Existence of Sharir depends upon only in the presence of three main pillars named as Satva, Aatma and Sharir.

CONCEPT OF शीर्यते इति शरीरम् :

The process which produces the regular waste mechanism harmful for humans is known as Catabolism. These wastes have to be discarded from body regularly for the well being of a human being. We know that human life inevitably depends upon the process of metabolism. Metabolism includes anabolism (उपचय) and catabolism (अपचय) processes. Here catabolism process can be understood as the process of शीर्यते इति शरीरम्। On the contrary Anabolism process refers to दिह् उपचये। which means the nourishment of human body.

Another aspect which refers to the concept of शीर्यते इति शरीरम् is the loss of age by every passing moment. We know that each and every person has fixed age, though no one knows his or her length of life. Therefore it is clear by the every moment we pass is the ever lost moment of his/her life. Therefore this can also be understood in this reference.

Another word जरा or Geriatrics is the term for ageing process of a human being. Here ageing process is related with the deterioration and degeneration of the physical structure in elderly stage of the human beings. Ageing process is the deterioration of anatomical & physiological features. It is a natural or physiological change process in the human phenomenon.

JARA: Jara can be defined as follows:

❖ जृष् वयोहानौ (पाणिनी संस्कृत मूल)

The word Jara is derived from the root word Jrish Vayohaunau which means that Jrish word is loss of age.

❖ वयःकृत श्लथमांसाद्यवस्थाविशेषै...। (वाचस्पत्यम् एवं शब्दकल्पद्रुम)

Jara refers to the flaccid muscular and other structural changes due to old age.

❖ वर्षीयान् दशमी ज्यायान्। (अमरकोष)

Standard Human life is considered to be the age of 100 years. Therefore tenth decade i.e. age between 90 to 100 years is supposed to be the Jaravastha.

❖ जीर्यन्ती अनयोः अंगानि इति जरा। (अमरकोष)

In old age, the condition of organs becomes deteriorated.

❖ पुरुषाः सर्वसिद्धश्च चतुर्वर्षशतायुषः।
कृतेत्रेतादिकेऽप्येवं पादशोह्रसति क्रमात्।
वर्ष शतं खलु आयुषः प्रमाणमस्मिन्काले।
In Satayuga, human age was 400 years which remained upto 100 years by the time of Kalayuga.

❖ कालस्य परिणामेन जरामृत्यु निमित्तजाः।
रोगाः स्वाभाविका दृष्टा स्वभावो निष्प्रतिक्रियः।।

Jara and Mrityu both occur by means of Kaala Parinama.

Symptoms of Jara as per Acharyas:

- अतः परं हीयमानधात्विन्द्रियबलवीर्यपौरुषपराक्रमग्रहणधारणस्मरणवचनविज्ञान भ्रष्यमान धातुगुणं वायु धातु प्रायः क्रमेण जीर्णमुच्यते आवर्षशतम्। (चरक)
- सप्ततेरूर्ध्वं क्षीयमानधात्विन्द्रियबलवीर्योत्साहमन्यहनिवलीपलितखालित्यजुष्टं कासश्वास प्रभृति– भिरूपैरभिरविभूयमानं सर्वक्रियास्वसमर्थं जीर्णागारमिवाभिवृष्टमवसीदन्तं वृद्धमाचक्षते। (सुश्रुत)

In these two excerpts, Acharyas have explained the symptoms reflecting deterioration in the functioning in human body due to Jara.

- वार्धक्ये वर्धमानेन वायुना रस शोषणात्।

Acharya says that all the deteriorating symptoms are caused by the Rasa Shoshana as a dominance and hyperactivity of Vata Dosha.

- वयोऽहोरात्रिभुक्तानां ते अन्तमध्यादिगाः क्रमात्। (चरक)

Acharya says that Vata, Pitta and Kapha Doshas remain dominant in reverse order dividing the span of either age or day or night into three equal parts. It means if the total span of age defined to be in Kaliyuga as 100 years (as mentioned above) is divided into equal three parts, then each progressive quadrant will be dominated by Kapha, Pitta and Vata respectively.

- स्वभावबलप्रवृत्ताः क्षुत्पिपासाजरामृत्युनिद्राप्रभृतयः। तेऽपि द्विविधाः–कालकृताश्च अकालकृताश्च। (सुश्रुत)

Acharya Sushruta mentioned Jara in Svabhava Bala Pravritta Rogas. These are of two types:

- कालकृतजराः परिरक्षणकृताः Developed by nature in its due period by the maintenance of proper diet, exercise & mental state.
- अकालकृतजराः अपरिरक्षणकृताः Developed by the following reasons%

  पंथा शीतं कदन्नं च वयोवृद्धश्च योषितः।

  मनसः प्रतिकूल्यं च जराया पंचहेतवः।।

  These are Panthah (engaging in exercise/efforts beyond the strength), Sheetah (experiencing severe cold environment),

Kadannam (ingesting improper or stale diet frequently), Vayovriddhashcha Yoshitah (copulating with old aged female) and Mansah Pratikulyam (conducting contrary to the mental appeasement)

Synonyms of Jara

- वृद्धः – वर्द्धते इति वृद्धः। (Grown to old age)
- प्रवयः – प्रगतं यौवनाख्यं वयोऽस्येति प्रवयः। (Age after the youth)
- स्थविरः – बहुकालं तिष्ठतीति स्थविरः। स्थविरं तु वृद्धत्वम्। (sluggish due to old age)
- जीनः – जीनति वयसो हीयते जीनः। (gone through the life to old age)
- जीर्ण – जीर्यते जीर्णः जरश्च। (deterioration due to old age)
- ज्यायन् – वर्षीयान् दशमि ज्यायन्। (running in the tenth decade of life i.e. 90 to 100 years of age)
- जरितः – जरा जाता अस्य। (deteriorated due to old age)

Theories related to Jara:-

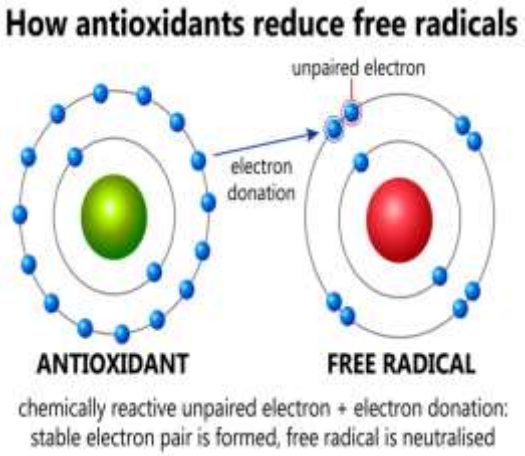
- **Theory of Innate Destruction (स्वभावोपरमवाद):** It is related to the deterioration of the organs by nature.
- **Breach of Homoeostasis (वैषम्यम्)**

  विषमदोषः विषमाग्निश्च विषमाग्निमलक्रियाः।

  म्लान्नात्मेन्द्रियमनाः जरावस्थायां नीयते। (self authored)

  This is related to the habitual practice of conducting malpractices in terms of diet, exercise or mental state.
- **Theory of Kaala:** This is related to the regular progression of age.
- **Theory related to environmental and other biological factors:** This is the theory related to the environmental factors such as pollution etc. and biological factors such as genetic causes as in progeria etc.

According to the modern, ageing process is ignited by the formation of free radicals in the human body. The free radical theory of aging was originally described by Denham Harman in the 1950s. In this a molecule with one or more unpaired electrons in its outer shell is called a free radical. Free radicals are formed from the molecules via breakage of a chemical bond such that each fragment keeps one electron by cleavage of a radical to give another radical.



The free radical theory of aging shows that it is caused by accumulation of damage inflicted by reactive oxygen species (ROS). The reactive oxygen species (ROS) induce oxidative damages under several environmental stress conditions like salinity, drought, cold, heavy metals, UV irradiation etc. This concept is very useful in defining the role of oxidative damage in the aging process. Free radicals can be formed during energy creation in cells & also due to harmful diet, stress, smoking, alcohol, harmful drugs, air pollution etc.

Geriatrics is concerned with the health changes in the elderly people. There is no set age specifying the age scheduled to be counted under Geriatrics. It can be felt when a person gets remarkably impaired & family members & his kiths and kins start feeling stress in caring him. A geriatric patient may have certain specific problems caused by mental, circulatory and sensory deterioration in the elderly people. The most prevalent problems in the elderly ones include dementia, delirium, falls, poly-pharmacy and coronary heart disease etc. Illnesses, diseases and medications may affect elderly people differently than the younger adults.

Generally, Geriatric changes are irreparable. Each and every person has to undergo this process sooner or later. The only thing possible is to manage a proper healthy well being by following different hygienic & dietary protocols. This can only delay the old age for a particular time not for whole life.

The concept of Dhatukshaya (/kkrq{k;) can be related to the development of ageing process. In Ayurved, the symptoms of Dhatukshaya are as follows:

रसक्षयः घट्टते सहते शब्दं नोच्चैद्रवति शूल्यते।
हृदयं ताम्यति स्वल्पचेष्टस्यापि रसक्षये।

रक्तक्षयः परुषा स्फुटिता म्लाना त्वग्रूक्षा रक्त सङ्क्षये।

मांसक्षयः मांसक्षये विशेषेण स्फिग्ग्रीवादरशुष्कता।

मेदक्षयः सन्धीनां स्फुटनं ग्लानिरक्ष्णोरायास एव च।
लक्षणं मेदसि क्षीणे तनुत्वं चोदरस्य च।

अस्थिक्षयः केशलोमनखश्मश्रुद्विजपतनं श्रमः।
ज्ञेयमस्थिक्षये लिङ्गं सन्धिशैथिल्यमेव च।

मज्जाक्षयः शीर्यन्त इव चास्थीनि दुर्बलानि लघूनि च।
प्रततं वातरोगीणि क्षीणे मज्जनि देहिनाम्।

शुक्रक्षयः दौर्बल्यं मुखशोषश्च पाण्डुत्वं सदनं श्रमः।
क्लैब्यं शुक्राविसर्गाश्च क्षीणशुक्रस्य लक्षणम्।

Geriatric Care:

As we know that Jaravasatha is a natural and essential part of human life. Therefore, Geriatric Cure is supposed to be understood to maintain or to follow the balanced dietary, physical or other routines which are necessary for the well being of the humans to delay the age of Jara in its natural course of time.

भद्रं कर्णेभिः शृणुयाम देवाः भद्रं पश्येमाक्षभिर्यजत्राः।
स्थिरैरंगैस्तुष्टुवांसस्तनुभिर्व्यशेतमहि देवहितं यदायुः। (यजुर्वेद)

This means always listen the good, always watch the good, keep your body features in well being. This all brings a well brought condition and healthy age to oneself. For the Geriatric care, following routines are must to be followed:

- ❖ Aahara
- ❖ Vihara

❖ Aushadha: i. Shodhana ii. Shamana iii. Rasayana

Here Rasayana Therapy can be understood as the Anti-oxidant theory. Anti-oxidants are the free radical scavengers.

Definitions of Rasayana:

❖ स्वस्थस्योर्जस्करं यत्तु तद् वृष्यं तद्रसायनम्। दीर्घमायुः स्मृतिं मेधामारोग्यं तरुणं वयः।

प्रभावर्णस्वरौदार्यं देहेन्द्रियबलं परम्। वाक्सिद्धिं प्रणति कान्तिं लभते ना रसायनात्।

लाभोपायो हि शस्तानां रसादीनां रसायनम्।। (चरक)

❖ रसायनं तु तज्ज्ञेयं यज्जराव्याधिविनाशनम्। (शार्ङ्गधर)

❖ यज्जराव्याधिविध्वंसि भेषजं तद्रसायनम्।

❖ रसानां रक्तादीनां प्रपनं अप्यायनं वेति रसायनम्।

❖ आयुशब्दस्येह करणे रसायनज्ञाने बोधव्यः। (चक्रपाणि)

❖ शरीरक्षय रक्षार्थं वाजीकरणमुच्यते। (वाग्भट)

❖ वयसः तरुणं स्थापयतीति वयः स्थापनम्।

❖ वयःस्थापनानि वयःप्राधान्यात् यौवनं स्थापयन्ति प्रभावात्।

❖ जीवनीय शब्देन इह आयुष्यत्वमभिप्रेतम्। (चक्रपाणि)

All these excerpts explain the benefits of Rasayana viz. long life, good memory, sharp brain, healthy state, youthful age, radiance etc. These are the health and immunity boosters in the humans. Rasayana is the therapy which cares for Jara and diseases both.

This is what we have gone through regarding Jara so far. Jara is a very vast subject with a vast literature in Ayurved as well as in modern medical texts. A lot of research is being taken up in the field of research across the globe and various new approaches regarding the management and care of elderly people.

I have mentioned in earlier content regarding basic information out of the ocean of information available in texts about Jara. It is just to give an insight about this vulnerable issue. One can identify the new areas of research in Geriatrics or Jara on the basis of vast literature available or having constant personal interactions with Geriatric society etc. It is very open subject as it needs a lot of attention to be paid for the care of ailing Geriatric community. But to move on to a research project, it is very much necessary to know about

the process or methodology to conduct research. In this regard now we will discuss about research, its types and some possible areas of research on Jara.

What is Research?

Resarch word is made of two words i.e. Re and Search. This means to search once again. It is an essential & powerful tool to progress and advancement in the subject. It is an attitude of inquiry, an attempt to elicit facts and a systematic and scholarly application of the scientific method. The systematic approach concerning generalization and the formulation of theory is also research. Therefore the term 'research' refers to the systematic method.

परीक्ष्यकारिणो हि कुशला भवन्ति। (च.सू. 10/5)

Acharya Charaka says in this context that one who undergoes an intense observation of the text as well as the practical becoems an acknowledged & expert physician. This reference is a universal truth or Aaptopadesha which can be applied in any field of research as a signature text for research methodology.

Hence the main component for the research is observation. Observation means to go through the investigations based on data, questionnaire, tests etc. This brings one to draw a conclusion.

कार्यकारणभावस्य द्रव्याणां गुणकर्मणोः। परिक्ष्यस्थापनं सम्यगनुसन्धानमुच्यते।

अन्वेषणं पर्येषणं गवेषणमथपि च। शोध इत्यादिपर्यायैः लोके समभिधीयते।

Acharya says that the establishment of cause & effect theory (कार्यकारणभाव) and the active principles & the outcome (गुणकर्म) of a particular research underwent under proper research protocol is named as research (अनुसन्धान). Its synonyms are Anveshana, Paryeshana, Gaveshana and Shodha.

- शास्त्रं ज्योतिः प्रकाशार्थं दर्शनं बुद्धिरात्मनः।

  ताभ्यां भिषक् सुयुक्ताभ्यां चिकित्सान्नापराध्यति। (च. सू. 9/24)

- प्रत्यक्षतश्च यद्दृष्टं शास्त्रदृष्टं च यद् भवेत।

  समास्तस्तदुभयं भूयो ज्ञानविवर्धनम्।।

❖ एकं शास्त्रमधीयानो न विद्याच्छास्त्रनिश्चयम्।

तस्माद् बहुश्रुतः शास्त्रं विजानीयच्चिकित्सकः। (सु. सू. 4/6)

❖ द्विविधमेव खलुसर्वं सच्चासच्च। तस्य चतुर्विधा परीक्षाप्तोपदेशः प्रत्यक्षमनुमानं युक्तिश्चेति।

सिद्धान्तो नाम स यः परीक्षकैर्बहुविधं परीक्ष्य हेतुभिश्च साधयित्वा स्थाप्यते निर्णयः। (च. वि. 8)

Importance of Research Design:

A research design manages accuracy in the proposed study. It helps to get maximum efficiency and reliability. It eliminates biased and marginal errors and hence minimizes wastage of time. It is helpful for collecting research materials and gives an idea regarding the type of resources required i.e. money, manpower, time and efforts. This way a research design guides the research in a right direction.

Key components of a Research Design:

All research designs contain certain common characteristics. These are:

- Purpose statement
- Techniques for data collection
- Methods for research analysis
- Type of research methodology
- Probable objections to conducting research
- Research study settings
- Timeline
- Analysis measurement

Steps in Research Process:

- Selection of the topic : This depends upon:

  a. Interest b. Relevance c. Data availability etc.

- Review of the literature
- Formulations of Hypothesis: This generates from:

  a. Discussion b. Examination of Data c. Review of Similar studies

- Aim and objectives

Aim is the goal and objective is how to achieve it.

- Materials and methods

  a. Research Design b. Target Public & Sample Explanation

  c. Inclusion /Exclusion Criteria d. Duration & Details of Follow up

- Observations and Results

  a. Analysis b. Justification c. Interpretation of Data

- Method of Communication of Research

  a. Research Publication b. Verbal Presentation c. Poster Presentation

Types of Research:

There are various types of research designs. Some of them are as follows:

Theoretical Research:

It is named as pure or basic research also. It generates knowledge regardless of its practical application. Here, data collection is used to generate new general concepts for a better understanding of a particular field or to answer a theoretical research question.

For example, a philosophical dissertation aims to generate new approaches from existing data without considering its application in practice. As in पंचमे मनः प्रतिबुद्धतरं भवति (Panchame Manah Pratibuddhtaram Bhavati) indicates the development of intelligence in the form of brain development. The research bases on the facts or statements available in the texts. Similarly study on Khalitya/Palitya which are the key symptoms of Jara can be done on the basis of textual literature.

Applied Research:

This finds strategies used to manage a specific research issue. It plans a theory to generate practical scientific knowledge. It is usually based on the knowledge or results obtained through a theoretical research.

For example Colle's fracture i.e. a type of fracture of the distal forearm in which the broken end of the radius is bent backwards, is the possibility if we

fall with a stretched hand. It is the applied aspect that why does this fracture happen. Similarly study on the elderly age or geriatric fractures aetiology can be worked upon. Same way other applied aspects of Jara causes and theories can be taken in an applied research design.

Exploratory Research:

It is the initial investigation of an issue which is not very common or sufficiently researched. It is supposed to establish a frame of reference and a hypothesis from which an in-depth study can be developed which enables conclusive results to be generated. As it depends upon the indulgence of little-studied aspect, it relies less on theory and more on the collection of data.

For example, Pumsavana Karma is not a common or sufficiently researched issue. Therefore it needs to be established based upon the exploratory research. Similarly teeth regeneration in humans after 100 years as it is sometimes said to be, can be an issue to explore something new.

Explanatory Research:

It is the most common type of research method. It establishes cause and effect relationship which allows generalisation to be extended to similar realities. It is closely related to descriptive research, although it provides additional information about the observed object.

For example, investigating how the physical features vary in varieties of people groups whether on rural or urban background, sedative or hard workers, geographical variations, young or elderly people etc. This way we can study the variations in Jara features in different people groups.

Co-relational Research:

This research design is used to identify the relationship between two or more variables. A co-relational study aims to determine the change in variables. Variables are the components which may be the different components in terms of variety of target people or other objects selected in general or on the basis of various sampling techniques. This research can be aligned with the Explanatory Research design as well.

For example, investigating how physical features vary in varieties of people groups whether on rural or urban background, sedative or hard worker, geographical variations or young or elderly people etc.

Qualitative Research:

It is used to collect, compare and interpret information and is used in techniques such as interviews, surveys, records and participant observations. It evaluates statistical methods to validate their results. In this the collected data has to be used numerically. This tends to be subjective as all data cannot be fully controlled. Therefore, this research is deems fit to extract meaning from an event or phenomenon (the 'why') than its cause (the 'how').

For example examining the effect of sleep deprivation on mood or quality of health of human beings.

Quantitative Research

This is used to research upon a phenomenon through quantitative data collection and using mathematical, statistical and computer-aided tools to measure them. It allows generalised conclusions to be projected over time.

For example, to measure the data like height, weight, temperature, age, Parkinsonism/ Dementia/Delirium/ Alzheimer's/ Blood Pressure cases etc.

Experimental Research:

This type of research is about designing or replicating a phenomenon whose variables are manipulated under strictly controlled conditions in order to identify or discover its effect on another independent variable or object. The phenomenon to be studied is measured through study and control groups and according to the guidelines of the scientific method.

For example, randomised controlled trial studies for measuring the effectiveness of new pharmaceutical drugs on elderly humans especially in the case of Parkinsonism/Alzheimer's/ Delirium/ Blood Pressure etc.

Non-Experimental Research:

It is also known as an observational study. It works upon the analysis of a phenomenon in its natural context. This limits its involvement to measure the

variables required for the study. Due to its observational nature, it is often used in descriptive research.

For example study of the effects of certain Yogasanas in a group of people suffering whether young or elderly, is a type of a non-experimental study.

Quasi-Experimental Research

It controls some of the variables of the phenomenon under investigation and is therefore is seemingly experimental. In this, the study and the focus group cannot be randomly selected but are chosen from existing groups of population. This ensures the relevance of collected data and the obtained knowledge, perspectives and opinions of the population which can be incorporated into the study for better explanation of the research.

For example, assessing the effectiveness of an intervention measure through particular Yogasana or Meditation in reducing the stress or blood pressure.

Cohort Study

Cohort is a group of people sharing common characteristics or experience within a defined period. Cohort study is a form of longitudinal observational study used in medicine for the analysis of suspected risk factors. It follows a group of people which does not have the disease. It can be used to find out association of a particular factor with the disease process. It can be better understood by the example of Framingham Heart Study as follows:

Framingham heart study started in 1948 in youth between 30 to 62 years and was taken up as IInd & IIIrd generation Cohort study in 1971, 2001 (in off springs) respectively. This long-lasted study gave astounding feedback of heart disorders. In this, every two years people were enrolled.

In this study, the selected people were investigated medical tests and asked detailed questions about their lifestyle. During the study, researchers kept records of which individuals developed heart disease and which did not. On this behalf, the researchers studied the connections between disease and the data that had been collected.

Prospective and Retrospective studies:

Prospective study:

It is the study to observe the future outcome. For example, Cohort study is followed for a specific time in a group of similar individuals. It is a prospective study important for research on aetiology of specific diseases.

Retrospective study:

It is done when the outcome has occurred and the cause factors are determined through a research study to look back at happenings that have already happened. We have seen this as a very recently in the terrific Covid-19 Pandemic which has affected billions of population across the globe and has caused millions of deaths. Later on researces were done for the proper medication and vaccination for the care and cure of this pandemic.

Longitudinal and cross-sectional studies:

Longitudinal study:

Co-relational research study involves repeated observations of same variables over a long period. It is a very time consuming study. Cohort study is also a type of longitudinal study.

Cross-sectional study:

It is a type of observational study involving the analysis of data collected from a population at a specific point of time. For example, studying developmental psychology in different age groups of people at one point in time. Due to this, differences between age groups can be attributed to age differences rather than those happen over time.

Descriptive and Analytical study:

Descriptive study:

It is used to identify the characteristics of a particular phenomenon instead of investigating its causes. It uses various surveys and fact finding enquiries. It is a study designated to depict the participants in an accurate way.

Analytical study:

This study is done for the use of the information already available for the researchers. It is used for the analysis of the information to make a critical evaluation of the facts. It is also defined as comparative study.

Sero Survey Study:

Sero study, also known as sero survey uses serology tests to check the presence of antibodies among the population. Tests detecting high quantities of a specific antibody in persons suggest prevalence of infection in the past. Usually these tests are conducted on a sample of the population, selected on the basis of sampling techniques to ensure the results to be scaled up to entire population. This way, sero survey needs not to be conducted on everyone or a majority of population. Only thing needed in this is that the people participating in it should truly represent the concerned population.

For example, a sero survey can be conducted for the presence of Post Covid-19 antibodies in elderly people.

Further types of Clinical Study Design

Single-arm trial:

This is the easiest clinical trial design. In this, a sample of individuals with the targeted medical condition is given the experimental therapy and then followed over time to observe their response. This is applied when the objective of the trial is to obtain preliminary evidence of the efficacy of the treatment and to collect additional safety data, but is not generally used as confirmation of efficacy. This design is applicable when the available patient pool is limited and thus it is not optimal to randomize many participants to a control arm.

Multi-arm trial:

The general Randomised Control Trial (RCT) design is probably the standard two-armed randomized trial. Two arm trials generally include the treatment arm and the control arm (alternative treatment/placebo arm). These trials may be more than two arms (multiple-armed RCT) i.e. a three-armed RCT

comparing a treatment arm with an inactive control/placebo arm and an alternative active treatment. A placebo is a medical treatment or procedure designed to deceive the participant of a clinical experiment. It does not contain any active ingredients but still produces a physical effect on the individual.

This way we have discussed various protocols or designs for research. But it is not the end. It may be possible that more dimensions in the future. We can undergo research in Jara Shaarir as well as on the basis of these Research Protocols. But one thing should always kept in mind that research in Jara Shaarir should focus the Ayurvediya aspects specially. In earlier days we generally used to undergo only observational/ survey/descriptive/analytical/ non-experimental research. But nowa days clinical & experimental research is also being taken up. This is because, it is the need of hour to explore various applied/ clinical or surgical anatomical aspects of Ayurvediya Shaarir.

The research in Rachana Shaarir has gained more signifance now a days as Anatomy or Shaarir is the basis of all the experimental researches as far as research on human research is concerned.

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ANATOMICAL CHANGES IN GERIATRIC WITH SPECIAL REFERENCE TO MUSCULOSKELETAL SYSTEM

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Abstract:- Ayurveda, one of the world's most authoritative mind-body-spirit medicinal systems, offers various concepts of the aging process. This system of medicine includes therapies for healthy aging to create optimal health and lengthen individual's heal thspan by living in harmony with nature. Various diet and regimen are mentioned in ayurvedic texts to take proper care with growing age. In old age different anatomical and physiological changes are seen in various system of human body. With advancing age, the skeletal muscles lose strength and mass while the bones lose density and undergo decalcification and demineralization. Consequently, older people often experience a loss of strength, become more prone to fall, fractures and frailty, develops stooping curvature of the spine, and have conditions such as sarcopenia, osteoporosis and osteoarthritis. As all our body systems, the musculoskeletal system benefits from moderate exercise as keeping active in old age helps to maintain both muscle strength and bone density.

Keywords:- Aging, musculoskeletal, saropenia.

Introduction:-

Aging is a universal process that probably began with the origin of life. Aging is known as "Jara" defined as that which has become old by the act of wearing out "Jiryati iti jara". It is synonymed asa "vardhakya" meaning increasing age[1]. Accumulation of the diverse deleterious changes produced by aging throughout the cells and tissues[2] Skeletal muscles allow the body to

move and maintain posture; by contracting, they also aid the venous return of blood to the heart and generate heat that helps maintain body temperature. Bones support the body, protect vulnerable regions and allow physical movement via a system of levers and joints; they also store fat and minerals, and house the red bone marrow responsible for blood cell production. With age, these components of the musculoskeletal system progressively degenerate, this contributes to frailty and increases the risk of falls and fractures. Special precaution by proper diet and exercise should be taken in old age to copeup with these changes.

Changes in skeletal muscles:

Older people often experience a loss of strength that can be directly attributed to anatomical and physiological changes in skeletal muscles[3]

Age related changes seen in skeletal muscles include: Reduction in protein synthesis, reduction in size and number of muscle fibers, particularly in the lower limbs, decrease in the number of progenitor (satellite) cells, reduction in muscle growth, reduction in the ability of muscles to repair themselves, replacement of active muscle fibres by collagen-rich, non- contractile fibrous tissue, reduction in the number of motor neurons and deterioration of neuromuscular junctions, increase in fat deposition at the expense of lean muscle tissue, accumulation of lipofuscin (an age related pigment), less-efficient metabolism, particularly in fast-twitch muscle fibres, reduction in blood flow to the major muscle group

With age, skeletal muscles atrophy and decrease in mass, and the speed and force of their contraction reduce[4]. This phenomenon, known as senile sarcopenia, is accompanied by a decrease in physical strength. Sarcopenia can impair the ability to perform everyday tasks such as rising from a chair, doing housework or washing oneself [5]

Maximal muscle mass and strength are reached in the 20s and 30s. This is followed by a gradual decline through middle age. From the age of 60, the loss of muscle tissue accelerates. In late old age, the limbs may lose so much muscle tissue that people with reduced mobility appear to be little more than skin and bone. Deep furrows may develop between the ribs because of

intercostal muscle atrophy, while the loss of facial muscle tissue contributes to a general loosening of the features.

This considerable loss of muscle tissue often seen in later years (senile sarcopenia), is associated with increasing frailty. While frailty is multifactorial, musculoskeletal deterioration and sarcopenia are central to it, and are both associated with increased weakness, fatigue and risk of adverse events such as falls, which can all increase morbidity[6]

Skeletal muscles are composed of two main types of fibres:

- Slow-twitch fibres (type 1), used for endurance activities, such as walking long distances;
- Fast-twitch fibres (type 2), used in short 'explosive' activities such as sprinting.

Sarcopenia is associated with changes in the number and physiology of fast-twitch fibres, while slow-twitch fibres are relatively unaffected by age. Indeed, recent studies show that slow-twitch fibres maintain and even increase the concentrations of some metabolic enzymes, perhaps to counteract the decrease in fast-twitch muscle fibre activity[7]

Sarcopenia is also thought to be driven by the loss of motor neuron fibres (denervation) and loss and degeneration of neuromuscular junctions (the synapses connecting motor neurons to skeletal muscles); as a consequence, muscles are less stimulated and lose mass[8]

Sarcopenia is exacerbated by the reduction in the levels of circulating anabolic hormones – such as somatotropin (growth hormone), testosterone and testosterone-like hormones – which decline from middle age onwards. As skeletal muscles are metabolically very active, sarcopenia is a major factor contributing to the age-related reduction in metabolic rate. On average, we lose 3-8% of lean muscle mass per decade from the age of 30, which compounds the decline in basal metabolic rate that starts from around the age of 20. If calorific intake stays the same as in younger years, there is a much greater risk that excess calories will be stored in the form of fat. This may be exacerbated in older people who are insulin-resistant, as their skeletal

muscles are less able to take up glucose and the amino acids used to generate new muscle fibres[9].

The loss of skeletal muscle mass leads to a progressive reduction in the support afforded to the bones and joints, which in turn contributes to the postural changes observed in older age It also increases the risk of joint pathologies, particularly osteoarthritis, as well as the risk of falls and fractures.

Aged muscles are more prone to injury and take longer to repair and recover. This slower recovery may be due to a reduction in the number of progenitor (satellite) cells – undifferentiated stem cells that can develop into new muscle cells or myocytes – combined with progressive cellular senescence[10].

Changes in bones

Vata Dosha is more promient in old age. As the age increases the lakshana of vata dosha also increase. As there is Aashrya Aashriya connection between vata dosha and Asthi dhatu the lakshana of increased vata are mostly seen in Asthi dhatu.

Bone mostly consists of:

- The inorganic component calcium phosphate (hydroxyapatite);
- The organic component type 1 collagen.

Calcium phosphate crystals form the bone matrix and give bones their rigidity. The skeleton acts as a calcium reservoir: it stores around 99% of all the calcium in the body[11]. Insufficient levels of calcium or vitamin D (essential for calcium absorption) can lead to a reduction in bone density and increase predisposition to osteoporosis and fractures. In older people, the gut absorbs less calcium and vitamin D levels tend to decrease, which reduces the amount of calcium available for the bones.

Collagen provides anchorage for the calcium phosphate crystals, knitting the bone together to prevent fractures. Some people have genes leading to faulty collagen production, which results in brittle bone disease (osteogenesis imperfecta).

Like muscle, bone is a dynamic tissue continuously being deposited and broken down. This state of flux is mediated by the two major bone cell types:

- Osteoblasts, which deposit bone;
- Osteoclasts, which digest bone, releasing ionic calcium into the blood.

Osteoblasts are more active when the bones are under the stress imposed by the weight of an upright, active body. In young mobile adults, osteoblasts and osteoclasts work at a similar rate and bone density is maintained. Inactivity means a decrease in osteoblast activity that ultimately results in reduced bone density[12]. The age-related loss of skeletal muscle mass contributes to the reductions in load (both weight and contractile force) on the bones, which compounds decalcification. It is therefore essential that older people keep as mobile and active as possible.

Changes to bone density

Studies (predominantly in the US) show that around 90% of peak bone mass is achieved in men by age 20 and women by age 18. Increases continue in both sexes until around the age of 30 when peak bone strength and density is achieved[13]. Bone density decreases as middle age approaches.

Women are at particular risk of bone demineralisation and osteoporosis as they gradually lose the osteo-protective effects of oestrogen pre and post menopause. In a 10-year study, women lost 1.5-2 times more bone mass per year from their forearms than men[14]. Bone loss in both sexes continues into old age, and 80-year-olds have approximately half the bone mass they had at its peak in young adulthood.

Osteoporosis

The age-related loss of calcium from the skeleton commonly leads to the bones taking on the porous, sponge-like appearance indicative of osteoporosis. There are two recognised forms of this:

- Type I, seen in menopausal and post-menopausal women and thought to occur as a result of falling oestrogen levels;
- Type II, referred to as senile osteo-porosis, which affects both men and women and appears to be caused by reductions in the number and

activity of osteoblasts. Additionally, some pro-inflammatory cytokines (whose numbers increase with age) such as interleukin 6 stimulate osteoclasts, leading to bone demineralisation.

The vertebrae are particularly vulnerable to osteoporosis and may develop micro-fractures resulting in them collapsing under the weight of the body and becoming compressed and deformed. This contributes to the stooping curvature of the spine often seen in older age.

Factors contribute to age-related bone loss and senile osteoporosis include : Reduction in testosterone levels in men and osetrogen levels in women, reduction in growth hormone levels (somatopause), reduction in body weight, reduction in level of physical activity, reduction in calcium absorption and vitamin D levels, increase in level of parathyroid hormone, smoking.

Risk of fracture

The age-related decrease in bone density is associated with an increased risk of fracture in many bones including the femur, ribs, vertebrae and bones of the upper arm and forearm. Osteoporosis is linked not only to a loss of inorganic mineral content, but also with a loss of collagen and changes to its structure. As collagen helps to hold bones together, this further increases the risk of fracture [15].

The risk of fracture is compounded by a lack of mobility, for example, due to a prolonged stay in hospital. Not only are fractures more common in old age, but healing takes much longer.

Population studies in the US show that around 5% of adults over the age of 50 have osteoporosis affecting the femoral neck (neck of the femur). This region is particularly vulnerable to fracture, as the two femoral necks support the weight of the upright body. Costache and Costache (2014) found that femoral neck fractures – which are serious and potentially life-threatening injuries – become more frequent after the age of 60 years and that women are more affected than men.

Joint changes

The articular cartilages in synovial joints play the role of shock absorbers, as well as ensuring the correct spacing and smooth gliding of bones during joint movement. The number and activity of chondrocytes, the cartilage-forming cells, decrease with age, which can result in a reduction in the amount of cartilage in important joints, such as the knees [16]. A lack of cartilage results in aged joints becoming more susceptible to mechanical damage and increases the risk of painful bone-to-bone contact that is commonly seen in osteoarthritis.

Osteoarthritis

Osteoarthritis is the most common arthropathy (joint pathology) in the world. Large-scale studies in the US have shown that around 10% of men and 13% of women over the age of 60 are affected by symptomatic osteoarthritis of the knee. In the UK, around 8.5 million people have joint pain due to osteoarthritis (National Institute for Health and Care Excellence, 2015). This places a great burden on health services as many patients will require expensive joint surgery, particularly to the knee, hip and lumbar spine.

The outer portion of a joint capsule is composed of elastic ligaments that bind the joint together, preventing dislocation while allowing free movement. With age, changes to the collagen and elastin components of ligaments decrease their elasticity, resulting in stiffness and reduced mobility. Certain joints are particularly susceptible; for example, between the ages 55 and 85 years, women lose up to 50% of flexibility and range of motion in their ankles. Although there are many risk factors associated with the disease (including genetic predisposition, gender, obesity and previous joint injury), age is by far the greatest.

Healthy musculoskeletal ageing

Many factors influence how our bones and skeletal muscles age; genetics, environmental factors and lifestyle all play a role, so there is much individual variation. Preserving the structural and functional integrity of the musculoskeletal system is essential to maintain good health and slow down the progression to frailty.

Calorific restriction

Programmed cell death (apoptosis) plays a role in bone loss and sarcopenia. The apoptotic pathways involved may be attenuated by exercise, calorific restriction and anti-oxidants such as carotenoids and oleic acid. Recent studies have shown that calorific restriction can slow down, and sometimes even reverse, age-related changes in neuromuscular junctions, thereby providing a potential mechanism for reducing sarcopenia.

Drugs that mimic the effects of calorific restriction and exercise – such as metformin (an oral hypoglycaemic used to treat diabetes) and resveratrol (an anti-inflammatory and anti-oxidant) – could be used instead of reducing food intake. Stokinger et al (2017) have reported some success with these drugs, particularly resveratrol, in animal models.

Dietary supplementation

Increasing the intake of calcium, vitamin D and lean protein can increase bone density and provide amino acids for muscle growth. This may offset the reduction in the efficiency of nutrient absorption seen in older age. We know that, in younger adults, increasing protein intake can enhance protein synthesis in skeletal muscles, but this seems to work less well in older people. Fragala et al (2015) found that dietary supplementation with creatinine can increase muscle strength and performance, while the intake of protein drinks supplemented with the amino acid β-alanine increases muscle-working capacity and quality in older men and women.

Hormone replacement therapy

Hormone replacement therapy (HRT) improves bone health in older people: oestrogen HRT and testosterone replacement therapy (TRT) are proven to increase bone density in women and men, respectively, thereby reducing the risk of fracture.

The effects of HRT on muscle physiology are less well investigated. TRT has been shown to increase lean muscle mass in men and appears to negate some of the effects of ageing on muscles occurring during the andropause; however, in women, HRT (with either oestrogen or oestrogen plus

progesterone) does not have the same anabolic effect. Women can use TRT, but they may be reluctant to do so because of unwanted effects such as facial and body hair growth and deepening of the voice.

Exercise

Unless regularly used and placed under load, muscle fibres and neuromuscular junctions degenerate, resulting in disuse atrophy. Moderate exercise helps to maintain lean muscle mass, increase bone density and reduce fat accumulation. Exercise also increases the number of mitochondria in muscle fibres, enhancing energy release, metabolism and muscle power. In people who remain physically active, the efficiency of mitochondria in releasing energy appears to be maintained until at least the age of 75.

Progressive resistance training is considered to be the most effective method to increase bone density and promote muscle growth in older people with sarcopenia. Older people attending a single exercise class per week and doing some exercise at home can improve muscle strength by 27%, effectively reversing age-related decline. When it comes to keeping the musculoskeletal system healthy, the bottom line is the common colloquialism: use it or lose it.

Conclusion:

- The age- related degeneration of the musculoskeletal system make older people prone to frailty, falls and fractures
- Sarcopenia is produced by the atrophy and shrinkage of skeletal muscles, coupled with a reduction in the speed and force of their contraction
- Osteoporosis and osteoarthritis commonly occur in old age as a result of bone changes
- To have a healthy musculoskeletal system, it is essential that older people keep as physically active as possible
- To avoide the early signs of vardhyakya avastha one should take various vayasthapan drugs
- Practice of daily Yoga and meditation helps in decreasing the signs of aging.

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ANATOMICAL CHANGES IN GERIATRIC: A REVIEW

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Abstract:- Aging in modern science is defined as a Progressive failure of the body haemostatic, adaptive response; Ayurveda has considered Jara or vardhakya as a natural and inevitable process as well as a swabhavaja vyadhi as old age sets in, homestasis between the Tridosas are disturbed. Kapha decreases resulting in an increased vata this result in disturbance in pitta too. As age advances, several changes take place in the body, in the external appearance, in the condition of Dosha, Dhatu, Mala, Agni, Oja, and so on, as well as in the mental and cognitive functions. Elderly people are susceptible to several chronic diseases also. This stage is characterised by decay in the body. Dhatu, perception power of indriya, potency, strength, speech, various mental and congnitive functions (e.g memory, intellect, reception, retention, analytic ability etc.) During this phase there is predominance of vaaya dosha, (one of the three physiological body factors). The major physical changes seen at this time are wrinkling of skin, graying of hair, baldness and diminishing ability to do physical work. These anatomical changes include loss of compactness of the muscles, looseness of joints, vitiation of Rakta, excessive production of meda, failure of majja, accumulation in bone failure of production of Shukra and loss of oja factor. Aging represents structural and functional changes of an organism over its

entire life span. The aim of this conceptual article is to compile the various Anatomical changes in geriatrics.

Key words:- Aging, Ayurveda, Geriatrics, Vriddhavastha

INTRODUCTION-

Avurveda has considered Jara or Vradhakya as a natural and inevitable process as well as a Swabhdvaja vyadhi. Acharya Charaka mentioned that the normal life span of humans is one hundred years[1], though life span is plummeting alarming; now a days it is considered as 70 years. Aging can be defined as the normal process of life which is characterized by degeneration of organs of various systems, and consequently losing their anatomical and physiological functions[2]. Some diseases and conditions that are common in old age are osteo-arthritis, hypertension, urinary incontinence, diabetes mellitus, arthritis, atherosclerosis, cardiovascular disease, cerebrovascular accidents, respiratory disease, senile dementia, delirium, confusion etc. Modern system of medicine has nothing much to recommend in geriatric care except the medical management of some diseases of the old age with limited health and prevention of diseases in old age.

MATERIAL AND METHODS-

This article is based on a review of Ayurvedic texts. Materials related to aging, Vaya, and other relevant topics have been collected. The main Ayurvedic texts and available commentaries on these. We have also referred to the modern texts and searched various websites to collect information on the relevant topics.

Concept of Vriddhavastha (later stage of life)-

Vriddhavastha is the last part of the lifespan and is mainly characterized by degenerative changes. Aging refers to a multidimensional process of physical, psychological, and social change. The changes are always degenerative in nature. According to Ayurveda the lifespan of an individual is divided into three parts known as Vaya. These are Balavastha , which lasts up to the age of 16 years; Madhyavastha, which lasts from the age of 16 years to 60–70 years; and Vriddhavastha, which refers to the period after 60 or 70

years3-5. Thus, every person will pass through a period when various decaying changes will take place, and this time period is known as Vriddhavastha. The major physical changes seen at this time are wrinkling of skin, graying of hair, baldness, and a diminishing ability to do physical work. The diseases that complicate this stage are Kasa (cough), Shwas(asthma), and so on6-7. Vriddhavastha may be of two types: timely (if it manifests after the age of 60 – 70 years) or untimely8. Untimely aging may result due to aggravation of vata and pitta dosha. Therefore, excessive utilization of all the causes of vata–pitta aggravation may lead to untimely aging. Some instances are causes of Rajayakshma, carelessness regarding prescribed regimen of tryopsthambha, causes of ojo-kshya, excessive and single use of Amla, Lavana, Katu, Tikta, and Kashaya rasa in diet.

CHANGES IN OLD AGE AS PER MODERN SCIENCE

Anatomical changes occur in the body in different system like, Cardiovascular system, Respiratory system, Gastrointestinal system, Urinary system, Nervous System, Sense organs, Endocrine system, Reproductive system, Musculoskeletal System & skin etc.

CHANGES IN OLD AGE AS PER AYURVEDA

Anatomical changes occur in Role of Tridosha, Agni9, Dhatus, Srotas etc. in geriatrics.

DISCUSSION-

Aging is one of the unavoidable processes occurring in each and every living being and one cannot prevent it. Classics have mentioned it as a Svabhavika Vyadhi, because risk of developing various diseases increases in old age. For understanding the process of aging in terms of Ayurveda, needs the analysis of the physiological changes occurring at the level of Tridoshas, Saptadhatus, Malas, Srotas, Indriyas, Agni and Ojas. The main Dosha involved is Vata and there is Agnimandya leading to improper nourishment of various entities of body. There are different patterns of functional deteriorations occurring with aging. There may be gradual and partial functional loss or compete functional loss. The dependent Dhatus also undergo improper nourishment. This process is gradual and leads to irreversible process of aging. Nidanas such as Ati

AharaVihara, Manasika Vega Adhaarana leading Srotolepa which in turn causes Agnimandya and Ama. When the function of Agni is vitiated, there is improper nourishment of Rasa and successive Dhatus. Finally leads to Shareera Apachaya and Ojo Haani resulting in Akaala Jara .

CONCLUSION-

Different anatomical and physiological changes occur by age. These changes often lead to health problems and even death in elderly. In order to ensure health and wellbeing of this growing age group, it is important that health care professionals, the government, the community, their families and the elderly themselves understand the changes that are happening and adapt the preventive measures to avoid the suppression of natural urges, follow the dincharya practice of regular yogic exercise, shodhana according to rutu and consumption of rasayana drugs at proper time. All these things will help to avoid increased risk related to aging.

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ANATOMICAL CONSIDERATION OF FACIAL AGING

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Abstract:- Facial aging is more than merely an aesthetic problem as the functional and anatomical changes manifest many clinical presentations. Facial aging is to be studied at many levels mainly facial aging is to be observed with facial changes related to the skin, muscle, soft tissues and even the bone. Advancement of age alters the facial outlook. Skin loosening and loss of muscular tone alter the external looks of an individual. Facial aging attributing factors are being studied in detail. Many factors like body mass index, hormones levels, associated addictions (like alcohol consumption and cigarettes smoking), sun exposure etc contribute the rate of facial aging[1]. The etiology and anatomical understanding of facial aging will lead to application of Ayurvedic Rejuvenation principles effectively as described in Ayurvedic texts in detail. Through this paper presentation, an attempt to understand the anatomical facial changes occurring with age will be done along with concept of Ayurvedic rejuvenation.

Keywords:- Facial aging, anatomical changes, histological changes, rejuvenation therapy, Vyasthapan

Introduction-

Facial aging leads to the imbalanced distribution of soft tissues, reduced support and increased creases, fold and wrinkles over face. Facial outlook is

the foremost impression of self-perception and perception of an individual seen by others thereby any alteration with facial aging also contribute to psychological, emotional and social effects in an individual's life.

Facial changes occur at following levels-

1} Facial Skin changes-

Skin is the outermost barrier between outer environment and inner organs. As the aging progress, facial skin starts manifesting multiple signs and problems. Skin aging is usually characterized by wrinkle appearances, laxity of the skin, any pigmentary appearances or any color irregularities. Skin aging occurs under influence of intrinsic and extrinsic factors.

Amongst many extrinsic factors, sun exposure is most deleterious to the skin. Air pollution and smoking are other added factors for facial skin aging. These factors cause dryness of skin, development of telangiectasia and yellowish coloration. The wrinkles developed are course and develop patchy skin complexion[2]. Extrinsic factors like hormonal changes, body mass index etc lead to the epidermal thinning due to intracellular reactive oxidative intermediates[1]

Histologically, dermis is the outermost layer of facial skin where collagen fibers provide strength, elastin fibers add elasticity and glucosaminoglycans keep the skin hydrated.

With the age, the collagen fibres are degraded while the elastin fibres are produced at a higher rate, the rate of whose production is being increased by the exposure and absorption of UV rays[3]. In extrinsically affected skin, the collagen fibres are disorganized giving an uneven appearance of skin. Also UV B rays being absorbed by the epidermis so the exposure to UV A ray causes the dermal damage mainly. While intrinsicallycaused facial skin aging reflects even pigmentation distribution with smooth wrinkles and expressions lines. Repeated muscular contractions lead to the development of superficial as well as deep wrinkles.

Histological changes observed in epidermis is thickening of epidermis and decrease in melanocytes while in fewer areas the melanocyes concentration

increases causing melanin production and keratinocytes accumulation termed solar lentigines [4]. UV radiation also leads to angiogenesis leading to development of telangiectases.

Histological changes observed are decrease in Langerhans cells alongwith morphologically abnormal fibroblast. All together these causes less production of collagen[5]. Extracellular components like glycoproteins, GAGs tends to decreased with progression of age leading to development of dry and leathery appearing skin. As per Ayurveda, with progression of age Vata Dosha in body is in greater proportion as compared to other Doshas thereby leading to dry and leathery skin in older age[6].

Some of anatomical changes observed in facial skin are as follows-

a. Glabellar frown lines: The vertical and sometimes slightly diagonal lines between the eyebrows developed by constant use of glabellar complex depressor muscles during the frowning or scowling. Stronger the muscles, deeper the wrinkles and thus more difficult to remove.

b. Transverse forehead rhytids: Lifetime lifting of eyebrows for facial expressions causes the thinning of tissues beneath them leading to development of wrinkles transversely over the forehead. At later age, they result to subconscious effort to raise drooping eyebrows.

c. Lateral canthal rhytids: Lateral canthal rhytids are caused by contraction of orbicularis oculi that lies in vertical direction around lateral canthus. Thus, contraction of the same causes development of wrinkles in perpendicular direction due to folding and pleating of overlying skin around the lateral canthus.

d. Vertical/Perioral rhytids: The volume and bone loss in maxillary region along with gravity effects the vermiliom thinning, philtrum flattening as well as cupid’s bow disappear thereby causes the development of vertical rhytids.

e. Marionette Lines: Long, vertical lines develop that circumscribe the chin laterally appearing as a ligament around the mouth while the chin is in relaxed position. Here the skin sagging occur while the fatty tissues deflate. They don’t appear in every person.

f. Glabellar creases and nasal root transverse lines are primarily caused by contraction of the corrugator supercili and procerus muscles, respectively.

g. Melasma/chloasma: Accumulation of melanin under the influence of hormones or in females in pregnancy or under the medication of oral contraceptives. This occurs under the influence of pituitary melanotrophic peptides [6].

2} Facial soft Tissues:

Facial soft tissues are present in two compartments- deep and superficial fat compartments. The facial fat is being compartmentalized by anatomical boundaries into nasolabial, medial, middle, lateral cheek, suborbucularis, buccal and periorbital fat compartments. As the age ascends, the fat component is reduced in volume giving the appearance of increased skin laxity and folds become more prominent around periorbital region, jowl and nasolabial region [7]. A study by Gosain et al[8] revealed through magnetic resonance imaging that it's the facial soft tissue that undergo ptosis while the musculature beneath show no much change in volume and length.

Some of changes observed due to loss of facial soft tissues are-

a. Ornamental groove- With age, lines at the corners of mouth are formed called ornamental groove.

b. Buccomandibular crease: On the side of the cheek above the lower jaw a vertical crease arises which gradually elevates after 30's

c. Brow droop: The eyebrow lowers down in position or the curve may flatten with age, both termed brow droop. This drooping occurs since the tissue of forehead drifts inferiorly.

d. Prominent bow ridges: As the fat diminishes and the thinning of underlying tissues occur, the eyes flatten thus making brow ridges appear prominent.

e. Eye bags: With aging, fat supporting the eyes move towards lower eyelids, muscles supporting eyelids weaken, giving an appearance of under and upper eye bags.

f. Eyelids changes: With gradual fat loss of preseptal and galeal fat pads, lower eyelid appears sunken while upper eyelid shows reduces muscular strength. Skin elasticity loses are prominent here. All these leads to appearance of darker skin in lower eyelid, leading to the appearance of dark circles around lower eyelid.

g. Sunken temples: With the loss of volume outside the eye, the bow bone becomes prominent causing sunken temples and scalloped appearance.

h. The subcutaneous fat deposition around the cheek reduces, giving the appearance sunken, hollow cheeks.

i. Ligaments holding the malar fat weaken thus shifting the malar fat pad and thereby creating the nasolabial fold and also bend the lip downward causing lip elongation.

j. Sagging chin: As skin loosen and muscle begin to slacken, double chin develop termed sagging chin.

k. Jowls: There is small focal accumulation of subcutaneous fat in lower cheek termed jowls.

3} Facial Bony skelton changes:

Along with soft tissues changes, depletion in fat and muscular strength and skin loosening, morphological remodelling in bony facial skelton also appear. With aging, posterior displacement of maxilla, lateral inferior shift of lateral and inferior orbital rim, shrinking of mandible in vertical and horizontal plane occur which when associated with fat and volume loss give facial skeletal differentiation with age.

Some changes observed in skelton are:-

a. Nose changes: With the progression of age, the nasal skin thickens while the ligament holding the tip of nose weakens, thus dropping of nose tip occur. This dropping is further caused by lose of maxillary bone under the tip and above the teeth region. These changes although gives bulge development appearance over nose termed dorsal hump.

b. Ear changes: The cartilage become more lax in ear region leading to slight ear elongation, loosening of ear lobe and ear widening.

c. In 50s or later, craniofacial convexity increases.

d. Orbital changes: Major changes occur to orbital rim, allowing the orbital aperture to increase in width and area. This causes the height of superior orbital rim to increase medially while inferior rim receded laterally.

Managing facial aging with Ayurvedic rejuvenation therapy:-

Facial aging is palliative and changes can be receded by applying principle of rejuvenation stated by Ayurvedic texts.

a. By applying the principles of Dincharya (daily regimen) in the daily routine. Sneha-Gandusha [9] is holding of oil in mouth strengthen the muscle and will prevent the fat loss by its Snigdha property.

b. Abhyanga [10] strengthen the muscles and ligaments thereby delaying the folds and wrinkles appearance. The increased blood flow towards the region while Abhyanga due to focal area reduces the skin laxity.

c. Rasayana drugs when taken, they add bulk to the muscles and provide a filler look to the face.[11]

d. Centella asiatica (Gotu-kala) is foremost Vyasthapana herb mentioned in Ayurveda as it has shown collagen producing properties. Alongwith collagen formation, it has healing and repairing effect on skin thus helps in reducing the wrinkles effectively.

e. Varya group drugs like sandalwood, vetiver etc. improves the complexion of skin thus locally managing the melanin pigment

f. Skin nourishing group of herbs (Twvachya) like grapefruit, Rose petals, Silk cotton tree that are good sources of vit A, C and E nourishes the skin and balances the vitiated Vata Dosha in skin and soft tissues.

g. Light and nutritive diet is recommended for easy digestion and for thirst water should be taken when urge arises. Similarly unsuppressible urges should be expelled. [12]

CONCLUSION:

Anatomical and histological changes occur to skin, fat compartments, ligaments, soft tissues and facial skelton attributing to the changes occurring during the facial aging in variable extends depending on intrinsic and extrinsic factors.

Anatomical understanding of skin aging and its etiology will contribute to development of focused rejuvenating therapy to restore harmonious facial balance lost with the passage of age.

After anatomical understanding of facial aging, principles of rejuvenation therapy and application of rejuvenating herbs provide the anti-oxidant effects over facial skelton delaying, defying and preventing the facial aging effectively.

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AYURVEDA: BOON FOR GERIATRICS

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Abstract:-The incidence of elderly people is increasing in the population all over the world including India, so it is now felt necessary to develop newer strategies for geriatric healthcare. Conventional medicine only offers medical management for the old age diseases, it has nothing much to offer in the area of geriatric care. Ayurveda (Indian traditional holistic health science) has wide ranging preventive measures to combat with the ageing process. It has a branch called Rasayana which essentially deals with geriatric problems. Preventive measures & management of health problems can help elderly people to live quality life. This will also help them to remain self-dependent for their daily activities up to the maximum possible extent. For all this what all needed is to slow down the rate of ageing & encourage the healthy ageing. Ayurveda has considerable scope for developing a safe & cost-effective protocol for geriatric care on the basis of Rasayana therapy, life style management & practice of Yoga.

Keywords:- Rasayana, Geriatrics, Panchakarma, Geriatrics in Ayurveda, Ageing, Geriatric care.

INTRODUCTION:

Ageing is the complex multileg & unavoidable process, which starts before birth & continues throughout the entire life span. It is essentially an anatomical & physiological phenomenon which occurs due to involutionary changes occurring in the mind & body system. In 21st century life expectancy has been increased & fertility rate has been decreased. So, the world population of elderly people is increasing day by day. According to population census 2011 there are nearabout 104 million elderly persons (aged

60 years & above) in India, 53 million females and 51 million males. A report released by the united Nations Population fund and help age India suggests that the number of elderly is expected to grow to 173 million by 2026.[1] Noteworthy causes of morbidity among the geriatrics are degenerative arthritis, osteoporosis, cataract, Alzheimer`s disease, hypertension, parkinsonism, macular degeneration, diabetes mellitus, benign prostate hyperplasia etc. Old age people are also vulnerable to infections involving respiratory, digestive, urinary tracts. According to government of India statistics cardiovascular disorders account for one third of elderly morbidity, respiratory disorders account for 10% morbidity, Neoplasm accounts for 6% morbidity.[2]

Nowadays due to rise in elderly population all over the world including India there is need to develop new treatment modalities for geriatric health care. While developing treatment modalities two problems should be kept in vision first is ageing process & second is medical management of the diseases specially occurring due to old age. The conventional medicine is better in second aspect but it has nothing to do with ageing process. On the contrary Ayurveda has got the potential for prevention of the diseases by promotion of health & management of the diseases occurring due to old age. Ayurveda has separate branch called Rasayana which deals with the problems occurring due to old age. It`s unique methodology delays ageing & also decrease the intensity of the problems occurring in this degenerative phase of the life.

Geriatrics- Described in Ayurveda

According to acharya Sushruta old age is above 70 years[3] whereas according to acharya Charaka its above 60 years.[4] As per fundamental principle of tridosha vata dosha is predominant in old age.[5] Vata dosha causes atrophy, involution of tissues and is responsible for most of the manifestation of aging. As the age advances agni also get depleted which again causes decay and atrophy due to defective metabolism.

According to Ayurveda ageing is swabhavaj vyadhi. Sharangdhar Samhita has reference addressing the loss of different biological factors during different decades of life due to ageing.[6] This scheme of acharya Sharangdhara is very important because it can provide us a guidance for

selection of age specific and organ protective rasayana. In the process of ageing there is decline of all dhatu, oja, virya, bala, indriya, utsaha etc.[7]

DECADES	AGE RELATED LOSS OF BIOLOGICAL FACTORS
0-10	Loss of childhood
11-20	Loss of growth
21-30	Loss of complexion
31-40	Loss of intellect
41-50	Loss of skin texture
51-60	Loss of vision
61-70	Loss of virility
71-80	Loss of strength
81-90	Loss of cognitive power
91-100	Loss of locomotive ability

Rasayana-

Rasayana deals with the geriatric care and rejuvenation. It helps human to live healthy and long life. It includes rejuvenating drugs, diet, healthy lifestyle along with positive psychological attitude. It acts on agni, dhatu, strotas and increases the nutritional value of the aahar rasa & improves digestion, absorption, microcirculation and finally develops good healthy tissue in the body.[8] As a result person gets long healthy life, immunity, happiness and intellect etc. Rasayana drugs have anti-oxidant, anti-stress, immunomodulating properties which adds to anti-ageing effect. There are certain types of rasayanas which are as follows-

1. Naimittik rasayana- Disease specific rasayana which induce specific bio strength and immune response in order to fight with the disease. e.g. Tuvarak-leprosy [9]

2. Age specific rasayana- Due to these rasayanas, bio-qualities that are lost during ageing process are compensated so that rate of ageing is decreased.

3. Achara rasayana- It is non-pharmacological approach which includes improved social and personal behavior and satvik aahara which brings out rasayana effect.[10]

4.Ajasrik rasayana [11]- continued consumption of nutritious diet in order to maintain optimum nutrition e.g. milk, ghrit

Rasayana dravyas- Ashwagandha, Bramhi, Mandukparni, Shankhapushpi, Yashtimadhu, Shatavari, Guduchi, Amalaki, Haritaki etc.

Rasayana kalpa`s- Chyawanprash, Vasantkusumakar rasa, Siddha makardhwaj, Amalaki rasayan, Shilajit vati etc.

Thus, rasayana therapy of Ayurveda provides preventive strategies and good quality of life. Also, age related changes can be delayed or treated with rasayana.

Panchkarma-

Panchakarma are designed to cleanse the microchannels of the body. when Rasayana therapy is paired with panchakarma then it tends to be more effective. It enables better nutritional status with rejuvenating activity. In geriatrics following panchakarmas can be performed- Abhyanga, Swedan, Shirodhara, Bruhan basti, Matra basti. Along with Rasayana and Panchakarma Ayurveda has many formulations, dietary and lifestyle guidelines which are helpful in treating the diseases related to geriatrics.

Predominant Geriatric Ailments & Ayurvedic Management

1. Vibhanda (Constipation): Causes are less fluid intake, low fiber diet, decreased intestinal motility, decreased mobility, certain medications

Clinical features: Hard stool, Painful defecation, incomplete evacuation and abdominal discomfort.

Treatment:

Pathya: Aahara, high fiber diet (green leafy vegetables), Consumption of light diet, Drinking plenty of fluids and water

Vihara: Regular exercise

Apathya: Low fiber diet, less quantity of water

Aushadhi: Isabgol, Triphala choorna, Avipattikar choorna, Erand Tail, Haritaki choorna etc.

2. Respiratory Disorders: In elderly common changes in physiology of lungs and bronchi are – Reduction in lung volume, fall in static, elastic recoil of lung, decreased ventilatory response to hypoxia, decreased lung defense, reduced mucocilliary clearance, progressive impairment in cough reflex.[12] Common respiratory diseases in elderly are COPD, Chronic bronchitis, bronchial asthma, emphysema, pulmonary TB etc.

Treatment:

Pathya Aahara: Tulsi, Haridra, Marich, Sunthi, Lavanga, Yashtimadhu, Luke warm water

Pathya Vihara: External Snehan on chest with tail mixed with saindhav lavan followed by hot fomentation (relieves breathlessness by acting as an expectorant), Practice of pranayama

Apathya vihara: Smoking, exposure to dust, cold, pollutants, chilled water.

Vamana and Virechana – In well-built elderly with Kapha predominance

Aushadhi: Suvarnamalini vasanat, Sitopaladi churna, shringa bhasma, Chyavanprash- Improves lung defense mechanism. For treating COPD & other illness Shwaskuthar rasa, Abhrak bhasma, Shringyadi churna, Vyaghriharitaki, Talisadi churna, Pushkarmula churna, Kaphaketu rasa, Kanakasava, Lavangadi vati, Eladi gutika, Kantakari Avleha. For treating respiratory illness of allergic origin Haridra Khanda can be used.[13]

3. Hypertension- Medical condition in which systolic BP is consistently above 140 mm of Hg & diastolic BP is 90 mm of Hg or higher. Systolic Bp is the stronger predictor of risk of developing cardiovascular events. HTN should be carefully & properly managed otherwise it may lead to CVS accidents, myocardial infarction, cardiomyopathy etc.

Treatment-

Pathya ahara- less salty diet, less fat in diet

Vihara- Brisk walking, Yogasana, Pranayama

Aushadhi- Sarpagandha churna/vati, Brahmi vati, Arjuna Churna/ Ksheerpak/Arishta, Mansyadi kwath.

Panchakarma: Shirodhara with- Bramhi oil, Takradhara.[14]

4.Pakshaghat/Hemiplegia- According to Ayurveda when vata dosha gets vitiated, it dries up the strotas & snayu of one side of the body, make the parts of that side incapable of functioning & loss of sensation called pakshaghat.[15] It can be very well correlated to hemiplegia. Hemiplegia is the commonest manifestation of stroke with neuralgia deficit which affects the face, limbs & trunk on one side or either side of the body.

Causes- Damage to pyramidal tracts due to any lesion, ischemia or hemorrhage

Treatment-

Pathya ahara- Vatashamak ahara

Pathya vihara- Physiotherapy of affected part, pranayama- Anuloma-viloma, meditation

Apathya- Salt & fat rich diet

Panchkarma -snehana (Narayan tail, mahamash tail etc.), swedana (shashtishali pindasweda) virechana (Erand tail), Niruha basti (dashmoola kwatha), Anuvasan basti (Bala tail), Nasya (Kshirbala tail), shirobasti (kshirbala tail).

Aushadhi- Ekangaveer rasa, vatavidhwansag rasa, sameerpannag rasa, mahayograj guggulu, Ashwagandha and Bala churna, Dashmool kwath and mashabaladi kwath.

5. Parkinsonism- common extra pyramidal disorder affecting older people. It has insidious onset. It is slowly progressive leading to severe morbidity.

Causes-Due to vitiation of vata dosha

Clinical features-resting tremors, rigidity, flexed posture, monotonous speech, bradykinesia, shuffling gate.

Treatment- Panchkarma – Abhyanga (mahamash tail, dhanvantar tail etc.) swedana, Matra basti (Narayan tail), Nasya (kshirbala tail), shirodhara (kshirbala tail, bramhi tail etc.)

Aushadhi -kapikacchu churna (seeds rich in levodopa which is potent to anti-parkinsonism)[16], Vanari gutika, siddha makardhwaj, Dashmula kwath, Ashwagandharishta, Chaturbhuj rasa.

Pathya vihara- Yoga & Meditation.

6.Senile dementia & Alzheimer's disease- characterized by progressive impaired cognitive function which affects individual's ability to maintain normal social and occupational function. Alzheimer`s disease is the leading cause of dementia. In dementia firstly higher mental functions are affected and later person may get disoriented to time, place and person.

Treatment – Snehapan (kalyanak ghrit), Nasya (purana ghrita), Shirodhara (bramhi tail) Aushadhi-Medhyarasayan–yashtimadhu,shankhpushpi, mandukparni, Guduchi (according to study- are source for developing new class of neuro-nutrients with cognition, memory enhancing and neuro-regenerative effect).[17] Bramhi is now established as a memory enhancer and has therapeutic role in the management of senile dementia,[17] Manasamitra vati, saraswatarishta, smritisagar rasa, bramhi vati, mandukparni swaras, Ashwagandharishta.

Pathya vihar -Pranayam-Anuloma-viloma, yoga- Shavasana.

7. Sandhigata Vata / Osteoarthritis- Degenerative changes in bone and joints are most common in elderly. Such degenerative changes lead to various diseases like osteoarthritis, osteoporosis, cervical- lumbar spondylosis etc. osteoarthritis is most important cause of locomotor disability in old age groups. It can be very well corelated to Sandhivat. In Sandhigat vata, vitiated vata afflicts the joint causing pain and swelling in the joint.[18]

Clinical feature- loss of cartilage, osteophyte formation, thickening of synovium etc.

Treatment- Abhyang, (mahanarayan and vishgarbha tail), swedana (nadiswed, pindaswed, patrapottali)- reduces joint pain and inflammation. Janu- griva- katibasti according to joint involved.

Aushadhi- guggulu kalpa- proven anti-inflammatory agent [19] e.g. yograj guggul, mahayograj guggul, trayodashang guggul etc.

Vatavidhvanasak rasa, bruhat vat Chintamani, dashmool kwath, maharasnadi kwath, nirgundi patra kwath.

Pathya vihar- regular massage with oil, avoid prolong walking, sitting, use of knee-cap, crape bandage while walking.

8. Osteoporosis- characterized by low bone mass due to detoriation of bone tissue with increased bone fragility. It is most common in female after menopause. Fractures are most common complications of osteoporosis. It can be corelated to Asthidhatu kshaya.

Treatment- pathya aahar- milk banana, calcium rich diet

Pathya vihar- weight reduction, slow and gentle exercises, regular massage of joint.

Panchkarma- Snehan, Swedan and tikta-ksheera basti.

Aushadhi- Abha gugulu, mahayograj guggulu, praval pishti, ashwagandha churna, panchtikta ghrit (increases bone strength)

9. Diabetes mellitus- characterized by hyperglycemia due to deficiency of insulin secretion or action. It can be corelated to Madhumeha in Ayurveda. It is the most important metabolic disease that affects nearly every organ/system in the body. In India about 10% elderly people (age 65 or more) have D.M. [20] Ayurveda prescribes some remedies in order to control this metabolic state.

Treatment- Drugs- haridra, jambu beeja, vijaysar, bilva, shilajeet.

Formulations- Vasantkusumakar rasa, trivang bhasma, shilajeet vati, chandraprabha vati, triphala churna

Pathya Ahar- yava, mudga, low calory diet [21]. Vihar-yoga and exercise

10. Benign prostatic hyperplasia (BPH)- [22] found most commonly in male above 60 years of age. Due to enlargement of gland, urethra is stretched and distorted which obstructs bladder outflow. BPH can be corelated to Asthila which is caused due to vitiation of vata dosha.

Clinical features- frequency of urination, nocturia, delaying initiative urination, reduced forcefulness of urinary stream, post void dribbling etc.

Treatment- Vata pacifying measures like avagah sweda (dashmoola kwath), niruha basti, anuvasan basti, uttar basti (varunadi ghrit).

Aushadhi- gokshuradi guggulu, chandraprabha vati, shilajeet vati, punarnavasava. These drugs are claim to decongest the prostate, increases bladder tone, improves urodynamics, acts as urinary antiseptic.

Pathya vihar – Kegels exercise.

11. Menopausal syndrome- [23] normal hormone deficit state that occurs at the age of 45-55 years

Clinical features- irregular periods, hot flushes, vaginal dryness, mood swings, loss of sexual desires etc.

Treatment- Pathya ahara- sprouts, soya, fruits, milk, calcium rich diet, anti-oxidants

Pathya Vihar- sunlight exposure, regular exercise, yoga, meditation,

Aushadhi- shatavari churna, ashwagandharishta, amalaki churna, ashokarishta, shatavari gud, chandraprabha vati, bramhi vati.

12. Urinary incontinence- most prevalent condition found in aged women, in which increased abdominal pressure causes leaking of urine.

Causes- increased abdominal pressure due to chronic cough, constipation, vaginal injury during child birth, loss of muscle tone due to ageing, estrogen deficiency.

Treatment- Pathya vihara - pelvic floor exercise, Ashwini mudra.

Aushadhi- Chandraprabha vati, shilajeet vati, vishtinduk vati.

Diet in geriatrics-

Nutritional requirement of adult and old people is different. Elderly are more vulnerable to malnutrition so, following diet should be taken during old age- light fresh and easily digestible diet, fruits, legumes, vegetables, frequent liquid intake, calcium rich diet, dairy products, fish eggs etc.

Vihara- Yoga, regular exercise, meditation.

CONCLUSION-

Urbanization and lifestyle changes have affected senior's health adversely. Due to increased life expectancy and decreased fertility rate no of elderly is increasing day by day, so geriatric health care must be made a part of primary health care. Ayurveda has explained ageing process and its treatment in detail. It has separate medical discipline for geriatric treatment called Rasayana. Rasayana include variety of methods and measures for healthy longevity. It is strength of Ayurveda in geriatric care. It is now very important to develop an effective protocol for geriatric care by combining rasayana, panchkarma, Ayurvedic medicines, dietics, lifestyle and yoga.

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CONTROLLING MEASURES FOR GERIATRIC DISEASES

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Abstract:- By 2050, the India 85 years old and over population will triple. Clinicians and the public health community need to develop a culture of sensitivity to the needs of this population and its subgroups. Sensory changes, cognitive changes, and weakness may be subtle or may be severe in the heterogeneous population of people over age 85. Falls, cardiovascular disease, and difficulty with activities of daily living are common. These population changes have considerable public health importance. Caregiver support, services in the home, assistive technologies, and promotion of home exercise programs as well as consideration of transportation and housing policies are recommended. For clinicians, judicious prescribing and ordering of tests includes a consideration of life expectancy, lag time to benefit, and patient goals. Furthermore, healthy behaviors starting in early childhood can optimize quality of life among the oldest-old. This paper reviews relevant changes of normal aging, diseases, and syndromes common in people over age 85, cognitive and psychological changes, social and environmental changes.

Keywords:- oldest-old, medical decision-making, public policy, aging, longevity.

Introduction:

The percentage of national populations over age 65 has been increasing in the last 10 years and will continue to rise for another 20 years. Beginning in 2030, the numbers of adults over age 85 will rise quickly. By 2050, the number of adults over age 80 around the globe will triple from 2015 numbers (1). Some nations are aging even faster.

Now is the time for the public health community to plan for the "older-older age wave." Many cities have begun to explore how to make themselves more "elder-friendly." As the baby boom-generation ages from 65 to 85, there will be a more intense need for services in the home and in community and institutional settings.

The aging process currently encompasses more than a generation and exceeds three decades. The common framework for describing different older adult populations is "young-old" (2), "old" (3) and "old-old." The "young-old" are people in their 60s and early 70s who are active and healthy. The "old" are people in their 70s and 80s who have chronic illnesses and are slowing down with some bothersome symptoms. The "old-old" or "oldest-old" (4) are often sick, disabled, and perhaps even nearing death.

When caring for older adults as a clinician or as a caregiver, predicting the future and then planning for the most likely aging trajectories are key steps. This paper presents a model for the clinical and public health needs of adults over age 85.

The changes associated with a chronologic age of 85 can be divided into a few domains: normal aging, common diseases, and functional, cognitive/ psychiatric, and social changes.

Normal aging

Although changes can be described in every organ system, this review will address changes with public health and clinical decision-making implications.

Sensory Changes:-

Hearing Loss

Hearing loss (presbycusis) and increased cerumen production with aging contribute to difficulty hearing. The prevalence of hearing loss increases as a function of age and accumulating risk factors and has a high association with reduced quality of life (5). Approximately one-half of adults over age 85 have hearing impairment (6). Mild hearing loss can impair speech processing, particularly if speech is rapid or if multiple talkers in large rooms generate reverberant noise. Therefore, verbal communication difficulties are most prominent in settings where people gather. Increased social isolation mediates the observed associations between hearing loss and depression, cognitive decline, and reduced quality of life.

The use of hearing aids could reverse adverse effects on the quality of life, and cognitive function in elderly adults (7). Unfortunately, among individuals with hearing loss in one study, only 14.6% reported currently using a hearing aid (8). Often, health insurance does not offer coverage for these devices.

Visual Acuity

Visual acuity decreases normally with age (presbyopia). Older adults will often have problems with glare, making night driving riskier. Visual acuity deteriorates faster at higher ages. Cataract surgery is typically safe and sometimes helps function (9).

Vestibular Function

Dizziness is a common multifactorial geriatric syndrome contributing to falls. Vestibular function declines subtly with age. Vestibular rehabilitation can be an effective treatment (10).

Muscle Strength and Fat Changes

Muscle mass and strength decline starting in the fourth decade of life. By age 85, approximately 20% of people meet criteria for sarcopenia (meaningful loss of muscle mass and strength) (11) .Chronic inflammation, declining hormone levels, impaired muscle mitochondrial function, and impaired

muscle stem cell function all probably contribute to sarcopenia (12) .This decline in muscle mass and increase in fat mass contributes to important changes in pharmacokinetics. Older adults may need lower medication doses than younger adults. Muscle weakness (13) and rapid rate of strength decline (14) both predict future mortality.

Immunosenescence

There are a wide variety of age-related changes in the immune system, some mediated by chronic inflammation and a chronic pro-inflammatory state. There is a decline in B cell function, a decline in T cell generation, altered T cell activation, and dysfunction of innate immunity (including impaired neutrophil function and chemotaxis and a dysregulated proinflammatory monocyte response). These changes (15) weaken the body's capacity to fight infection. For example, influenza infections are more common and more serious in older adults while the vaccine is less effective. Cellular immune dysfunction also contributes to the prevalence of herpes zoster among older adults. Vaccines are generally not as effective for older adults. High doses of the influenza vaccine may be more helpful than standard doses (16) . Chronically slowed inflammatory processes also contribute to slow wound healing in older adults (17) .

Urologic Changes

The urinary bladder is often not sterile in older adults but rather is colonized with bacteria not causing infection. Asymptomatic bacteriuria is more common in women than men and is most frequent among hospitalized patients and residents of long-term care facilities (up to 50% of women in these high risk groups) (18). Use of antibiotics in this situation is inappropriate (19) and may contribute to antimicrobial resistance.

Somatic Disease and multiple chronic conditions:-

Cardiovascular Disease

Cardiovascular disease remains the most common cause of death of older adults, although death rates have dropped in the last 20 years. This category includes chronic ischemic heart disease, congestive heart failure, and

arrhythmia. Ischemic heart disease may be underdiagnosed in the oldest-old (20). Normal aging includes vascular remodeling and vascular stiffness (21) . Atherosclerosis causes inflammation and further vascular changes (22) increasing risk for cardiac events, cerebrovascular events, peripheral vascular disease, cognitive impairment, and other organ damage.

Hypertension

Hypertension, a major contributor to atherosclerosis, is the most common chronic disease of older adults (23). Isolated systolic hypertension is particularly common among older adults and is associated with mortality even at advanced ages. The value of intensive pharmacotherapy for hypertension in people over age 75 remains controversial. Evidence seems to suggest that aggressive treatment should be offered (24) and continued as long as it is well-tolerated and consistent with the patient's goals.

Cancer

Cancer is the second leading cause of death in older adults. However, by age 85, the death rate from cancer begins to fall (25). Slow-growing tumors seem to be common in this population.

Response to cancer treatment depends on functional status rather than age. Individuals in their ninth or tenth decade should not be denied aggressive cancer treatment simply due to age.

Screening is not recommended for breast cancer after age 75, due to insufficient evidence for benefit, although there may be benefit for women with a long life expectancy (26, 27). Similarly, for people over age 75, colon cancer screening is only recommended in cases where there is a long predicted life expectancy and a perceived strong capacity to tolerate cancer treatment, if needed (27, 28). At any age, life expectancy is quite variable in older adults, based on comorbidities and other factors (29).

Screening for prostate cancer is not recommended due to frequent false positives, which are burdensome, and to identification of slow-growing tumors (30).

Osteoarthritis

Osteoarthritis is the second most common chronic condition (23) among older adults and a common cause of chronic pain and disability. Fifty-two percent of 85-year olds had a diagnosis of osteoarthritis in one study (20) . The prevalence of osteoarthritis seems to be higher among women than men. Obesity is a risk factor for osteoarthritis and as the population ages (and particularly as the overweight population ages), the rate of severe hip, and knee arthritis will increase. Pain management will continue to be a vexing clinical and health policy problem as virtually all analgesics have remarkable risks in older adults. Osteoarthritis treatments also include costly joint replacement surgery, which is often accompanied by intensive rehabilitative therapies. Low back pain is itself a common symptom particularly in older women and the cause is often multifactorial. Non-pharmacologic treatments can help.

Diabetes Mellitus

Diabetes rates have been increasing as populations age and become more overweight. The prevalence of diabetes among older adults may increase more than 400% by 2050 (31). Diabetes remains a strong risk factor for cardiovascular disease at age 85 (32). Diabetes is also associated with peripheral arterial disease and peripheral neuropathy, contributing to diabetic foot ulcers and amputations. Diabetic foot ulcers occur in 6% of diabetic patients annually and amputations in about 0.5%. Management approaches in diabetes should be individualized. Sulfonylureas and insulin carry a substantial risk of hypoglycemia and use should be weighed carefully in vulnerable older adults. Transitions from hospital to home or post-acute care are risky times for patients treated with hypoglycemic agents as dosing needs may fluctuate . Regular foot examinations are critical for people with diabetes to prevent amputations. Regular walking can improve circulation in the legs.

Osteoporosis

Osteopenia is normal loss of bone density with aging. Many 85-year-old adults have osteoporosis, a more severe weakening of bone density. Osteoporosis is associated with an increased rate of bone fractures, while

osteopenia is not. Bone density screening is recommended for women over age 65 (33) . Although the prevalence of fractures in men increases by age 85, the value of osteoporosis screening for men has not been clearly demonstrated. The effectiveness and safety of calcium and vitamin D supplementation in order to prevent fractures remains controversial.

Multiple Chronic Conditions

The prevalence of multiple chronic conditions is increasing, due to aging of populations and to increasing diabetes rates. Older adults with multiple chronic conditions account for a large percentage of health spending. Targeting this population for research and for quality improvement should improve care and reduce costs.

CONCLUSION:

The aging process is universal but not uniform. Awareness of age-related physiological changes, such as reduced acuity of vision and hearing, slow reaction time, and impaired balance, will prepare patients and caregivers to manage risks, make informed decisions, and perhaps prevent falls and medication adverse effects.

Functional deterioration in an elderly person can also arise from social and mental health problems. Awareness of these problems may prevent age-related deterioration, such as attention to depression and suicide risk in men during the first year following the death of a spouse or depression after hip fracture or stroke.

Optimizing vision and hearing can prevent isolation, depression, and cognitive impairment. Lower extremity strength especially of the quadriceps muscle is critical for basic activities of daily living, especially bathing, walking, and performing transfers. People over age 85 need these muscles for stability and preventing falls. Walking speed is a helpful measure. Resistance exercise such as regular walking is recommended to help maintain strength and prevent cardiovascular disease. Maintaining a healthy body weight throughout the life span likewise can prevent diabetes, osteoarthritis, and other chronic diseases.

Decisions to prescribe medications or order screening tests should take into account goals of care, burden, risks, and lag time to benefit. In the future, more adults over age 85 will benefit from home-based services and technologies and will benefit from creative transportation and housing services opportunities for social participation, as well as programs to support family caregivers.

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A REVIEW ON ANATOMICAL CHANGES IN JARA (GERIATRICS)

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Abstract:- Jara Avastha is the later phase of life in which maximum decline of bodily elements observed. In other words, it is a catabolic procedure which (Paramanuvibhajana) happens in the body because of degradation of body elements. Aacharya Sharangdhar and Vagbhata has narrated decade wise decline condition such as Balya, Vridhii, Chhavi, Medha, twaka etc. According to Charakacharya the normal life span of human being is hundred years in which Vardhakya avastha starts from over 60 yrs. But in the present era, natural process of aging has also become fast due to changes in environment, food cultivation with chemical fertilizers, pesticides etc. Consumption of this type of food and toxins accumulate in the body that causes premature aging. As age increases various anatomical, Patho-physiological and cognitive changes occurs in different age related disorders such as Osteoarthritis, hypertention, urinary incontinence, diabetes mellitus, arthritis, cardiovascular disease, cerebrovascular diseases etc. The present review draw the attention towards the anatomical changes in geriatrics and its related disorders.

Keywords:- Jara, vardhakya, swabhavaja, vata, dhatu, agni.

INTRODUCTION:

Aging for everyone begins at birth and ends at death. According to Ayurveda, Jara or Vardhakya is a natural or unavoidable process. It is mentioned in our text that there is dominance of kapha dosha in balyavastha (childhood), pitta dosha in madhyamavastha (Puberty) and vata dosha in vridhavastha (old age). In old age along with increase in vata dosha , their occur decrease in rasadi dhatu. Due to both these causes their occur various degenerative changes in body and process of decay of body starts gradually. Physical changes related to ageing are not always diseases. We all change physically as we grow old. Some system slow down while other lose their fine tuning.

As per 2019, over 139 million people living in India are aged over 60 which is over 10% of country's total population. Geriatric age group play an important role in society. Aacharya Charaka mentioned that the normal life span of humans is one hundred years[1], but nowadays due to improper dietary habits, excessive stress and lack of exercise, the process of ageing starts very earlier and life span has also decreased. As age increases a lot of changes start occurring in a person. The changes may be anatomical or physiological. The body changes with ageing because changes occur in individual cell and also in all organs. Due to all these changes, their occur changes in function and in appearance. Some diseases and conditions that are common in old age are osteo-arthritis, hypertension, urinary incontinence, diabetes mellitus, arthritis, atherosclerosis, cardiovascular disease, cerebrovascular accidents, respiratory disease, senile dementia, delirium, confusion etc.

ANATOMICAL CHANGES IN OLD AGE GROUP ACCORDING TO VARIOUS SYSTEMS:

1. Change in Musculoskeletal system:

Muscle mass decreases with age which causes increase in fatigue and risk of falling. Postural changes in aging include stooping forward with head tilted backward and knees, hips and elbows flexed. Muscles, bones and joints play an important role for maintaining posture. Age had effect on all the three and over time back tends to curve forward resulting in an increasing stooped

posture. Some changes are due to bones losing calcium. The trunk shortens due to decrease in intervertebral space. Muscles shrinks and looses strength which also contribute to curvature of spine. Kyphosis can be seen in the old aged person.

2. Changes in Respiratory system:

Age related changes in respiratory system includes rigidity of the respiratory muscles .The functional unit which is alveoli enlarges in size which result in reduction in both ventilation and vital capacity[2]. The reduced strength of diaphragm is due to muscle atrophy and reduction of diaphragmatic muscle strength increases and respiratory rate increases in elderly which result in fatigue and may eventually cause ventilatory failure. Mobility of ribs decreases due to calcification of ribs and thus chest wall becomes stiff.

3. Changes in Cardiovascular system:

Their occur deposition of aging pigment- lipofusion in valves of heart, due to which they thicken and become stiffer. Number of pacemaker cells decreases and fatty and fibrous tissue increases, this causes a slightly slower heart rate. Blood vessels become stiff and less responding to harmones which relax the valve of vessels and thus result in increase in systolic blood pressure.

4. Changes in Urinary system:

The size and function of kidney begins to decrease in 40yrs of age and significantly decreases by 60 yrs[3]. Renal blood vessels become smaller and thicker reducing renal blood flow. The muscular ureter, urethra and bladder loose tone and elasticity. The bladder may retain urine which causes incomplete urination. Bladder capacity decreases from about 500-600ml to about 250 ml , this causes more frequent urination. Renal impairment may also affect vitamin D metabolism which decreases vitamin D levels causing osteoporosis in elderly[4].

5. Changes in Neural and sensory system:

Brain and spinal cord lose nerve cells and undergo atrophy. Slowing of thought, memory, and thinking is a normal part of aging. Size of pupil grows smaller with age which causes problem in focusing accurately. Lens of eye

become yellow which makes it difficult to see red and green colours. Iris becomes more rigid with reduced tear formation causing dry eyes. Labyrinth and vestibule begins to degenerate with age, which may cause loss of balance. Sensation of smelling is lost gradually due to decrease in smell receptor. Taste diminishes with the age because of atrophy of taste buds. In old age sense of touch is also diminished.

6. Changes in skin:

Number of epidermal cells decreases by 10% per decade and they divide more slowly making skin less able to repair itself quickly. Epidermal cells become thinner making skin look thin. Hair becomes grey due to decrease in melanin production.

7. Changes in Reproductive system:

In females, menopause occur in age between 45-55 years. The ovaries stop making harmones estrogen and progesterone. FSH and LH levels falls down slowly which causes loss of muscular tone of breast. In male, testosterone decreases, testes become softer and smaller. Sperm production decreases and erection are less firm. Prostate gland enlarges which compresses urethra and causes inhibition in flow of urine.

8. Changes in Endocrine system:

The basal metabolic rate falls by 1% per year after 30 year of age. Fall in metabolic activity and reduced muscle mass may cause impaired thermoregulatory control. Approximately 25% of patients over 85 years have non insulin dependant diabetes mellitus. Diabetes leads to renal impairment, cardiovascular disease, neuropathy and retinopathy. Elderly patients also have an increase in thyroid disorders, osteoporosis and nutritional disorders.

9. Changes In the Immune System :

The thymus gland begins a progressive involution (degeneration) beginning at puberty. By age 50, only about 5% to 10% of the mass of the thymus remains, and by age 60, no thymic hormones are produced. The natural antibodies decrease in number, whereas autoantibodies increase, causing a

greater risk of autoimmune disease. Elderly people are more likely to die of infections than young adults[5].

CHANGES ACCORDING TO AYURVEDA:

1. Effect of Tridosha on ageing:

The tridosha play an important role in our body. In Ayurveda, the phenomenon of ageing can be related to principle of tridosha. Aacharya Charaka describes that the vata phase of life as our final act, as in old age there is prominence of vata dosha. As vata increases, their occur a lot of physical changes in body gradually. Vata dosha has properties such as ruksha , laghu, sheeta, khara and vishad. Due to these properties of vata, their occur changes such as dryness of skin, reduction in body strength and the process of body decay starts which means ageing starts gradually.

Due to disturbed pitta, in olg age there is loss of appetite, loss of luster of skin, atrophy of muscles, wrinkles etc. Sadhak pitta can be correlated with CSF in brain. As vata increases, pitta reduces and their occur a lot of changes in brain in olg age. Some of them include loss of balance, memory loss etc

Kapha dosha also decreases as age grows. Kapha has guna such as snigdha, guru, manda etc which means kapha is oily, heavy, smooth, slimy and stable . Normal function of dosha is disturbed and due to this their occur changes such as varicose veins, stones, Glaucoma, joints become loose etc

2. Effect of agni on ageing:

As age increases, their occur disturbance in dosha. As vata dosha increases it causes visham agni[6]. Due to this there occurs ajirna or agnimandya. Production of ana occurs which releases a lot of free radicles. These causes injury to cells and it gradually damages all the cells which leads to ageing. When the function of Agni is vitiated, there is improper nourishment of Rasa and successive Dhatus. Finally leads to Shareera Apachaya (improper nourishment of body) and Ojo Haani (damages the Ojas) resulting in Akaala Jara (premature aging).

CONCLUSION:

Aging is one of the unavoidable processes occurring in each and every living being and one cannot prevent it. Classics have mentioned it as a Svabhavika Vyadhi (naturally occurring disease) because risk of developing various diseases increases in old age. There are structural and functional changes at cellular level, tissue level and organ level. The main Dosha involved is Vata and there is Agnimandya leading to improper nourishment of various entities of body. Changes with ageing can be normal and not always disease. The changes occur according to various systems of the body. All the changes donot occur in each and every old person. The changes may vary person to person.

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AYURVEDA AND SENILE STRUCTURAL CHANGES

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Abstract:- Jara also called as Vardhakya (aging) is defined as that which has become old by the act of wearing out. According to Ayurveda, Jara/aging is not a disease but a natural phenomenon like hunger, thirst or sleep. In the theory of natural destructions (Swabhavoparamavada), Charaka describes that there is a causative factor for the manifestation of a being but there is no cause for the cessation of this manifestation, since death following birth is a state of natural flow. As all Aacharya explained ashtang ayurved and ashtang hrudaykar explained the ashtang ayurved i. e. Kay, bal, grah, etc. So there is jara on 7 th branch so it's separate branch of ayurved. And very important delicate branch to teach and treat.

Keywords:- Jara Aging, Lifespan, Healthspan, Ayurveda, Vriddha-vastha, Parinama.

Introduction:-

Aging is a universal process that probably began with the origin of life. Accumulation of the diverse deleterious changes produced by aging throughout the cells and tissues progressively impairs function and can eventually cause death. Aging changes can be attributed to development, genetic defects, the environment, disease and an inborn process the aging process. The aging of the world's population has profound implications for medical care and health care systems.

According to the United Nations, the number of people worldwide aged 60 years or older will increase from 1 in 10 currently to 1 in 5 by 2050. By 2050, the ratio of people aged 65 years or older to those aged 15-64 years will double in developed nations and triple in developing nations.[1][2]

Accordingly, Jara/aging is influenced by factors affecting Shareera (physical), Indriya (emotional), Satwa (psychic level), Agni (metabolism) and Bala/Ojas (immunity). In addition, Parinama (cellular transformation), Sharira vriddhikara bhavas (genotypic and phenotypic characteristics) and Garbhahinivrittikara bhava (pregnancy induced fetal development and changes) also affect an individual's aging process.

Jara is accompanied by the process of decay and manifests in the form of various degenerative changes. Although these changes are natural (Kalaja Vriddhavastha-natural aging), they are not pleasant. Everyone is aware that a person who has taken birth must grow and finally die, but nobody wants to grow old and certainly no one wishes to die. Humans in general consider aging and age-associated diseases as unnatural even though. [3][4]

Choices and actions are responsible for the rapid biological aging. Misusing the five senses (pancha tanmatras) and bringing in disharmonious impressions through the five sense organs (pancha jnanendriyas), making incorrect choices that promote unhealthy transformation of the body and mind (Parinama), all trigger the disease process resulting in mental and physical suffering.

Mental and physical ill-health weakens dhatusamya (homeostasis), resulting in Akalaja vriddhavastha (pathological aging. Ayurveda takes a holistic approach toward the maintenance of dhatusamya, a state of equilibrium of normal anatomical, biological, physiological, mental and spiritual well-being. Hence a balanced state (sama) of tissue (dhatu), energy systems heat of transformation (Agni) and metabolic wastes (mala) constitute homeostasis in sharir. [5]

Aims and Objectives

1. To re-evaluate, discuss, and elaborate the various Ayurvedic concepts and principles related to aging.
2. To understand the health-related problems of the elderly; aging is a natural and Yapya (palliative) disease and also a risk factor for many diseases.

Materials and Methods -

This article is based on a review of Ayurvedic texts. Materials related to aging, Vaya, and other relevant topics have been collected. The main Ayurvedic texts used in this study are Charak Samhita, Sushruta Samhita, Ashtang Samgraha, Ashtang Hridaya, Bhava Prakash, and Sharangdhar Samhita, and available commentaries on these. We have also referred to the modern texts and searched various websites to collect information on the relevant topics.

Factors Influencing Aging –

Jatharagni –

Jatharagni (digestive fire) not only regulates the digestion, absorption and assimilation of food but also has a profound influence on the lifespan and healthspan of an individual. Jatharagni is the root of all the digestive fires in the body. Jatharagni serves as the central digestive fire and is the representation for all metabolic functions in the body. This includes the digestive function, cellular metabolism, sense perception, thought function and transformation of mental and emotional impressions. If Jatharagni is too weak, the digestion of food is compromised resulting in malabsorption and accumulation of toxins (ama). If Jatharagni is too strong, it burns out the associated tissues resulting in tissue degeneration. Thus, the state of Jatharagni influences the aging process[6][7]

Aachar –

Achara (routines) refers to the physiological machinery that controls the circadian rhythm or the 24-h body clock and is another component that has an

important role in the aging process. According to Ayurveda, the health of all living beings is governed by an internal clock that runs on a 24-h, light-dark cycle in conjunction with the sun and earth's movement. Ayurveda provides several guidelines about the operations of the body clock in terms of time and season-based routines called day routines (dinacharya), night routines (ratricharya) and seasonal routines (ritucharya). These guidelines include optimal times to arise and sleep, breathing routines, elimination, bath, massage, exercise, diet, study, travel, and other pursuits. Ayurveda recommends healthy and harmonious lifestyle routines to sustain and maintain the synchronicity of the circadian rhythm that results in good health. [8][9]

Aahar –

Ahara (diet) is another important factor that influences aging/Jara. A poor or defective diet (GramyaAhara) together with disharmonious lifestyle triggers the vitiation of any or all three Doshas, leading to pathological changes and reduced lifespan . Poor dietary practices include among others, improper timing of food intake, eating meals late at night, incorrect choices of food, consuming stale, processed or highly refined food, cold foods, eating in a noisy environment, and eating in a stressed mental state. An over abundance of calories and the highly refined foods together with poor eating practices may lead to increased inflammation, reduced control of infection, increased rates of cancer, increased risk for allergic disease and reduced immunity (Ojas). These changes coupled with altered enthusiasm, insomnia, and lethargy can result in failure to live out the complete lifespan. [10][11]

Prakruti –

Prakruti refers to the biological constitution (anatomical, physiological and psychological) of an individual. The Prakruti which is unique to each individual reflects the baseline characteristics of the individual including metabolism, mental makeup, immunity, inherent strength and weakness and proclivities. Thus, Prakruti determines an individual's capacity for transformation at the physical, mental and emotional levels owing to the interactions with internal and external stimuli all of which affect the aging process. [12]

Dosha –

Doshas or biological energy systems determine the longevity at the cellular level. Vata, which is closely related to pranic life energy, governs all life functions and biological activity and is the energy of movement. Pitta governs digestion and metabolism. Kapha controls anabolism and is the energy of building and lubrication that provides the body with physical form, structure, and the smooth functioning of all its parts. Health and disease is a direct reflection of the status and interaction of the Doshas in the body that in turn provokes or delays the aging process. Proper diet, exercise and a harmonious lifestyle can create a balance among these Doshas ensuring a healthy healthspan. [13]

Subtle Dosha –

Subtle Doshas are subtle counterparts of Doshas and an elaboration of the mental and emotional aspects of the physical Doshas that also influence the Jara/aging process. The subtle counterparts of the biological Vata, Pitta and Kapha Doshas are Prana (subtle life energy), Ojas (subtle immunity) and tejas (subtle vitality/subtle fire or energy) that are necessary for smooth longevity. Prana controls breath, sensory perceptions and the thought process and thus is responsible for mind-body coordination. Tejas represents the digestion and transformation of sensory impressions, intelligence, thoughts, perception and awareness that results in a suitable action. Ojas represents robustness, strength and vitality and is responsible. [14][15]

Kal Parinam –

Kala Parinama (time and transformation) is one the most important and potent factors that influences Jara or aging as it includes all creation in itself. Kala Parinama refers to the physical and mental transformation that occurs as a function of time and as we age. Being out of harmony with the rhythms and cycles of nature can trigger unhealthy transformation and disharmonious changes, making the body vulnerable to disease and rapid agingaging. Kala influences a human from conception till death and this time period is called Ayush (lifespan).

Ayurveda divides Ayush into Vaya (various stages of life)-childhood (Bala up to the age 16 years), adolescent/teenage (vivardhamana, 16), etc. [16]

Structural Changes IN VRUDDHAVASTHA

Advancement of age usually creates numerous problems in the individual. Geriatric problems may be mainly divided into four categories:

- Physical
- Psychological
- Emotional
- Social

Physical problems according to various systems -

The following are some very common physical disorders of the old age:[17]

Cardiovascular - hypertension, MI, CCF Respiratory - asthma and bronchitis

Musculoskeletal - osteoporosis, spasm, drooping shoulder

Gastro-intestinal - dyspepsia and flatulence

Genito-urinary - nocturia, prostate enlargement

Locomotor system - osteoarthritis, rheumatoid arthritis, gout

Endocrinological - diabetes is one of the major endocrinological problems found in old age.

Ophthalmic - senile cataract andand glaucoma are very common in old people.

Hearing - loss of hearing and hard hearing are the major hearing problems of old age.

Nervous - insomnia is commonly found old age problems.

Problems of hair - hair loss and baldness.

Cancer incidence and severity increases with age

Senile Structural Changes IN Female –

The period during with reproductive capacity decreases (ie, ovarian failure) then finally stops loss of estrogen & progesterone; FSH & LH 11). This is also described as the transition from perimenopause (-age 40s) to menopause.[18]

Thinning & graying of pubic hairs.

Loss of fat in external genitalia giving them a shrunken appearance.

ovaries & uterus decreases in size & weight.

Skin is less elastic loss of glandular tissue gives breasts a sagging appearance

Other physical changes may include hot flashes (can cause sleep deprivation if they occur at night), sweats, imitability, depression, headaches, myalgias. Sexual desire is variable. Atrophy of vaginal tissues due to low estrogen levels = thinning & dryness occurs; agglutination of labia majora & minora may occur.

Senile Structural Changes In Male –

Changes in testicular function

Decrease in sperm count

Erectile Dysfunction

Benign Prostatic Hyperplasia i.e. the prostate gland enlarges with age as some of prostate tissue is replaced with scar like tissues. It affects 50% of male. [19]

Discussion –

While there are various theories and approaches to management of aging, the traditional knowledge remains important both in understanding the process and effective management. Several interventions have been tried for treatments of various conditions. primarily arising as a result of aging. Since aging process has been experienced by human beings for several generations, the traditional knowledge from various parts of the world provide easy, natural and holistic ways for healthy aging. Ayurveda, the great Indian

tradition also offers conceptual framework on various theories and concepts of aging process. Ayurveda also offers time tested therapies for healthy aging.

Ayurveda describes several processes to address control and prevention of aging. Panchakarma is one of the popular rejuvenation and detoxification process that consists of three stages including Purva Karma (pretreatment), Pradhana Karma (primary treatment) and Paschat karma (post treatment). Snehana (oleation) and Swedana (sudation) are the two Purva Karma procedures. The four Pradhan Karma include Vamana (medical emesis), Virechana (purgation), Nasya (nasal administration), Basti (enema). A school of thought from Sushruta also considers Raktamokshana (bloodletting) as one of the Pancha Karma. Paschat Karma (post treatment) mainly deals with Ahar (diet) regimens, Vihar (exercise) and use of health-promoting Rasayana and other medicines.

Rasayana has broad meaning indicating qualitative and quantitative improvement of dhatu (tissues). Vayasthapana are specialized rasayana drugs that reverse degenerative changes, increase life span with quality health. The main utility of Rasayana therapy is in functional and degenerative disorders that have a chronic or long standing nature. In such cases, in fact, rasayana is the only solution from the point of view of effective management in any system of medicine. Rasayana becomes more fruitful and effective, if it is preceded with suitable Panchakarma (purificatory therapy). The reason we see mixed results in many cases where Rasayana is employed is because of the fact that, either this purification is not done or improperly done.

Conclusion –

To live a long and healthy life is every individual's wish. Due to changing lifestyle and thus not able to follow the rules of dietetics human beings have led to an emergence of varied problems for the elderly in India. It is obvious that the process of ageing was elaborately described in ayurvedic texts and a separate medical discipline called Rasayana tantra was developed which described a variety of methods and measures to promote healthy longevity. Undoubtedly, it is the strength of ayurveda in the context of geriatric care Rasayana is a therapy which bestows excellent rasa which ultimately results

in promotion of longevity, alleviation of old age and diseases so as to enjoy the full span of life. Government of India has also launched a national campaign to popularize the strength of Ayurveda and Yoga in geriatric health care. It is the demand of the hour to develop an effective holistic protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines and lifestyle and Yoga.

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A CRITICAL REVIEW ON JARAAVASTHA (AGEING) W.S.R. TO AYURVEDA

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Abstract:- Ancient Ayurveda is one of the highly identified systems of medicine, invented from Vedas. Jaravastha and Jarachikitsais the sub portion of Ayurveda that deals with the difficulties of aged individuals.Ayurvedahas described about prolonged existence and vitality in terms of Jarachikitsaand Rasayana. The aspects of ageing in pharmacological as well as non- pharmacological approaches have been explained methodically in Ayurveda standards.Geriatrics is appeared as a main interesting specialty as of over developing population of elderly folks all over the biosphere.

Kala (Time) interrelates with a human from beginning tillexpiry and this spell period is titled as Ayu (lifecycle). On interpretation of the collaboration of Kala, several fluctuations happen in the Sharir (body) during the period of Ayu; these are natural and cannot be changed. According to the kind of alter that take place, the natural life has been separated into three division, also recognized as Vaya (various stages of life); these are Balya (early phase of living), Madhya (middle phase of living), and Jirna or Vriddhavastha (later on phase of living).

Ayurveda highlights the promotion of vigor and prevention of diseases with different measures like wholesome diet improper quantity. Dincharya, Sadvrittapalana, Achara Rasayana, practice of yoga, Rasayana, panchakarma and regular use of some herbal drugs like Ashwagandha, Guduci, and Amalaki etc. An individual has to adopt these measures to prevent from Akalaja Jara (earlyaging). Ayurveda

takes a complete methodology near the maintenance of Dhatusamya (homeostasis), for which several principles have been defined.

Key Words- Dhatu, Jaraavastha, Sadvritta, Vriddhavastha ,Rasayana.

Introduction:-

Ayurveda was introduced to the earth so that man could increase in value a elongated and healthy natural life.[1] Numerous categories of values have been defined in Ayurveda classics. A person interrelates with several features, e.g, Panchabhautik (manifested) creations, alive or non-living. It is recognized that at the base of all creation, there are nine Dravya, (relevant factors) 2 that is, Panchamahabhuta (Aakash,Vayu, Aagni,Jala, and Pruthvi); Mana (mind); Atma (soul); Kala (time);and Disha (directions). Panchamahabhuta.

Afford the simple configuration for all the manifestations and this establishment of Panchabhautik, is acknowledged as the universe. The universe be situated within the boundaries of Kala (time) as well as Disha (directions) in a clockwise method. In the middle of all the Dravya, Kala is the maximum significant and effective, as it contains all manufacture in itself as well as it affects all formation in a clockwise manner, and human beings are no exception.[3,4] Kala(Time) interrelates with a human from beginning till expiry and this spell period is titled as Ayu (lifecycle). On interpretation of the collaboration of Kala, several fluctuations happen in the Sharir (body) during the period of Ayu; these are natural and cannot be changed. The major alter carry out in the body during these phase are, growth, achievement, maintenance and decompose. Thus, Jaraavastha is the procedure of moldering and these manifests in the form of various degenerative alter. Although these changes are natural, they are not pleasant. one and all is conscious that a individual who has taken beginning must grow and finally die, but no one wants to grow older and definitely no one desires to die. It is the nature of a human being. Ayurveda believe all this status, which are not pleasurable in environment, to be illness: they reason suffering to human being and a few suffer is termed as a infection or disease.

Ayurveda takes a completemethodologynear the maintenance of Dhatusamya (homeostasis), for which several principles have been defined. Jaraavastha is deliberated as a disease that might be demonstratedappropriate or untimely. Hence, a thorough explanation about prevention, preservation, and management of Jaraavastha has been specified. Certain of the procedures that have been directed can be monitored and certain cannot. Still, we can follow particular practical valuesplus make Jaraavasthaeasy and germ-free.

Aims and Objectives

1. To re-assess, discuss, and elaborate the several Ayurvedic ideas and values correlated to Jaraavastha.
2. To recognize the health- associateddifficulties of the elderly; Jaraavastha is a natural and Yapya i.e.palliative illness, also a threat reason for numerous syndromes.

Materials and Methods

This article is recognized on a review of classical Ayurveda texts. Materials linked to Jaraavastha, Ayu, Vaya, and furthersignificantsubjects have been composed. The chief Ayurvedic texts used in this study are Ashtang Samgraha, Sushruta Samhita, Ashtang Hridaya, Charak Samhita, Sharangdhar Samhita, Bhava Prakash, and accessible commentaries on these. We have similarly referred to the modern texts and searched various websites to assembledata on the significantareas.

Conceptual study:

1. Vriddhavastha the later phase of lifecycle

Vriddhavastha is the last portion of the life and is principally categorized by deteriorating modifications. Jaraavastha denotes to a multi-dimensional procedure of psychological, physical and social transformation. The modifications are continuously degenerative in environment.[5–8] Ayurveda mentioned the lifespan of an human being is distributed into three parts recognized as Vaya.

Table No. 1 Vaya Avastha and age limits. [9–11]

Sr.no	VayaAvastha	Modern corelation	Age limits
1	Balavastha	childhood	16 years
2	Madhyavastha	young and middle age	16 years to 60–70 years
3	Vriddhavastha or Jirnavastha	old age	60 or 70 years

Each individual will pass through a period when numerous moldering modifications will take place, also this interval is known as Vriddhavastha. This phase is described by degeneration in the human physique, Dhatu (various anatomical tissues), sensitivity supremacy of the Indriya (sensory plus motor body part in human), effectiveness, power, speech, innumerable psychological and cognitive utilities and functions (e.g., memory, brainpower, response, retention, investigativecapability, etc.). For the duration of this stage there is majority of Vaayu Dosha (one of the main three physiological body factors in human being). The chief physical alterations perceived at this period are wrinkling of skin, baldness, graying of hair, weakening ability to do day to day physical workup.[12] The infections that make difficulties this stage are Shwas (asthma), Kasa (cough) and many more.[13,14]

Vriddhavastha may possibly of two categories: timely (if it manifests after the age of 60 – 70 years) or untimely.[15]Untimely Jaraavastha could be consequence due to intensification of vata and pitta dosha. Hence, excessive utilization of all the reasons of vata–pitta augmentation and it may lead to untimely Jaraavastha. Certain examples are results of Rajayakshma (it's a syndrome through lacking immunity), carelessness regarding given diet of tryopsthambha means Ahara, Nidra, Bramhacharya i.e.(diet, sleep, and coitus), reasons of ojo-kshya means due to lacking immunity, extreme and only single consumption of Katu, Tikta, Amla, Kashaya, and Lavana rasa in regimen.

Pathophysiology of Jaraavstha

There are a variety of theories concerning the pathophysiology of Jaraavastha in modern medicine, but we will have some restriction to the Ayurvedic point of view. Growth, development, and maintenance of the anatomy and physiology of the human body is totallyhooked on four kind of influences i.e. Kala (time), Swabhava (nature), Aahara (diet) which should be excellent in the terms of nutrients, and nonexistence of obtrusiveinfluences in the growing and improvement of the Sharir(body).[16] Amongst these, Aahara (diet) is precisesignificant as it nourishes Dhatu and is reliable for the maintenance of strength,solidity, compactableand establishment of an brilliant formation of dhatu. This outstanding formation of dhatu replicates and called as Sara/ Sarata i.e. absolute completeness of human body tissues. Sarata makes an individual appearance young, good looking and attractive.[17,18] Once the regimen is faulty in the terms of Gramya-Ahara i.e. incomplete or poor and unplanned nutritionand when the instructions of diet are not followed concerning regimen as well as lifestyle.i.e. when there is misappropriate in day sleep, daily coitus lacking Vaajikarana (aphrodisiacs), day-to-day alcohol consumption, extreme physical workup, deficiency of exercise, psychological and emotional fluctuations, etc.), then as specified through Charakacharya in the second sub- chapter of Rasayan (rejuvenation) there is vitiation of Tridosha, which indications to numerous progressive pathological deviations due to inappropriate utilization of the regimen. These pathological variations contained feat of density of the muscles, looseness of joints, vitiation of blood i.e. Rakta dhatu, extreme manufacture of Meda means fatty tissue, disappointment of Majja (bone marrow) buildup in bones, disappointment of manufacture of Shukra that’s correlation with semen, and damage of Oja which is vigorous factor of human being. This pathology indications to several symptoms; likewise, no eagerness due to growth in sleep, lethargy, and exhaustion; the respiratory rate is greater than before; the individual is incapable to initiate as well asachieve physical and psychological workup; the memory, intelligence, and complexion(skin appearance)depreciate; and the individualconvertedvulnerable to numerouscategories of infectious diseases and miss the mark to living out his wholenatural life.[19] When all these modifications are manufacturedpermitting to Kala (time) and Swabhava

(nature), it is recognized as Kalaja Vriddhavastha (natural/normal Jaraavastha).

These alterations can be reduced, avoidable also this phase might be prohibited; if the modifications have previously established, they can be skillfully managed. When these modifications are generated due to imperfect regime and way of life, Vriddhavastha initiates earlier and then acknowledged as Akalaja Vriddhavastha (untimely Jaraavastha). It maybe manages and cured. Kalaja Vriddhavastha can correspondingly be cured, however the procedures that are labeled for it are exact challenging to implement and unpractical in the present era, and moreover, the medicines that have been designated for the management of Kalaja Vriddhavastha are either inaccessible or controversial.[20] Still, in our view, it is probable to treat Kalaja Vriddhavastha, if the treatment principles are followed exactly as described in the classical Ayurveda texts.

Prevention of Jaraavastha

The principles are described here. As beforespecified, the process of Jaraavastha is totally dependent on diet and lifestyle. Jaraavastha can be prevented by:

1. Including certain significant ethics of Dincharya (daily routine as per Ayurveda) in life style, i.e., Anjana (a type of eye care treatment); Abhayanga (body massage with help of oil etc),[21] specially Shiro-Abhayanga (head massage with Sneha);[22] Nasya (oil drops in nostril);[23] Sneha-Gandusha (retentive of oil in the mouth);[24] cleaning of feetsas well asexterior orifices;[25] workout;[26] etc. .
2. following the furtherethics of Swasthavritta as application of Tryopastambha Aahara, Nidra, Brahmcharya permitting to the instructions;[27] to tolerate suppressible desires (i.e., mental instabilities) & to eject insuppressible desires (i.e., natural desires);[28,29]systematic elimination of intensified Dosha allowing to Rutu means seasons by Panchakarma therapy[30]consistent application of Rasayana (invigorating management) as well as Vaajikarana therapy (aphrodisiacs); [31] subsequent the ethics of Sadvritta (social &

personal principles) and Achara Rasayana (principles having special effects of Rasayana).[32]

3. Taking a régime confidently in agreement with the approved instructions.[33]

Management of Jara (Jaraavastha)

It is a normal plus Yapya (palliative) illness; it occupies the essential place among the Yapya infections in the context of Agrya dravya (primary) defined in charak sutrasthana section 25.[34] It is vital to achieve this passé of Jaraavastha appropriately, as it is a period of greater than before susceptibility to several chronic and deteriorating diseases. The following ethics can be reflecting in this context:

1. Preserve the lifestyle as close as possible to the supreme recommended by Ancient Ayurveda.
2. Avoid the provoking reasons of Kshaya (degenerative changes) and Vata, for example, extreme physical and psychological exertion, energetic exercise, tolerance of unsuppressible desires, intolerance of suppressible needs, etc.
3. Follow, as far as possible, all the instructions concerning food habituate; take a Laghu (light) and Santarpaka (nutritive) regime.
4. Application of Rasayana, Vaajikarana, and Yapana Basti [35,36] (a kind of enema having palliative property) commonly.
5. Follow the ethics of Sadvritta and AcharaRasayana.[37] Include oneself in the Ultimate Power (God) or the eternal fact by some means as it increases the level of satva in mind. Thus all these belongings progress psychological immunity.
6. If any disease persists or manifests, take management punctually.

Treating of Jaraavastha according to Ayurveda

Jaraavastha is considered a kind of illness and its treatment has been clearly designated in several Ayurvedic texts. Even in Sushruta Samhita, there is a chapter titled Swabhavavyadhipratishedhiya, in which Rasayana Chikitsa

(rejuvenating treatment) is labeled. In this chapter, various management ethics for usual diseases have been stated. Treatment ethics connected to Jaraavastha are absolutelyreliant on Rasayana[38,39] as illustrated in the well-known story of Maharishi Chyawana. Yet, particular Vaajikaran preparations are also beneficial, specifically in the context of coitus.[40] If Rasayana treatment is usage permitting to the traditional techniques as well as if the preciseAyurveda drugs are easy to get, it will be relatively possible to treat Jaraavastha effectively. Although, the procedures designated are unpractical and cannot be monitored in this era, due to several causes, e.g. medications are either unreachable or are a smaller amount efficacy, the lifestyle of the individuals is fastest and hectic, there is a lowest level of Satva or faulty psychological composition.

Discussion

Jaraavastha is almost totally normal occurrence, but not one person wants to develop old, a dilemma that everybody faces appearances. In Ayurveda, eachstate (whether transient or persistent) that indications to a disorder of homeostasis is characterized as a disease.[41–43] Therefore, Vriddhavastha has also been recognized as a disease: It is classified underneath of natural/normalized illnesses. These natural illnesses are cause by Swabhava (nature) and depend on kala (time). The samples or sign of normal diseases are hunger, thirst, Jaravastha (old age) death.[44,45] Even though, not one person can escape these sign of diseases, they can be amended. If a person can cross the boundaries of time efficaciously with the exercise of yoga and samadhi, he can escape Jaraavastha and Mrutyu/death. Although, such a individual will necessity to have a precise extra superior level of consciousness,[46] which is relatively not possible in this present date. Ayurveda is a curative science and we are talking about common individuals. Thus, we have to think through only those methods that can be monitored by an ordinary individual and physician, and they must be measures that are practically realistic also. By means of such techniques it is conceivable to avoid early Jaraavastha, to sluggish down the phenomena of Jaraavastha, to control this phase by palliative care & treatment of Vriddhavastha is also conceivable as per the traditional techniques from Ayurvedic texts.

Thus, it is clear that a complete explanation of Jaraavastha and its prevention and management have been given in the classical Ayurvedic texts. Aptopadesha means textual knowledge is the first stair to the track of achievement of knowledge. Consequently, let us step frontward in the light of Aptopadesha and suggestion our facilities to human being.

Conclusion:

Jaraavastha is a normalized regression; the body is slow decomposing constantly, which is termed in Ayurveda as Shiryate Iti Shariram. Premature Jaraavastha is absolutely preventable if the ethics of Ayurveda are strictly followed and maintained. The pathophysiology of Jaravashta /Jaraavastha is mostly hooked on diet, and hence, this procedure of Jaraavastha can be reduced by appropriate diet timetable. Vriddhavastha can be treated by palliative therapy/care. It is even probable to cure Vriddhavastha according to the ideologies of Rasayana, specifically permitting to Swabhavavyadhi pratishedhiya chapter of Sushruta Chikitsasthan. However this is merely a theoretical study, but the data providing can be used in several clinical, experimental or scientific studies.

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AGE RELATED CHANGES IN GERIATRICS

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Abstract:- The structure and function surrounding the airway change by the age, which may ultimately result in having anatomic features of difficult airways in the elderly. Hence, we reviewed the literature focusing on the age-related anatomic changes and accordingly to compare the characteristics of difficult airways. With age, teeth wear and loss, protein and collagen synthesis reduction, and bone loss and muscle atrophy results in aged face (chin protrusion, cheek retraction and drooping), jaw restriction (temporo-madibular joint disc displacement and osteoarthritis), neck and back stiffness, and kyphotic deformities (degeneration of spinal articular cartilage, intervertebral discs, and spinal osteoporosis). These age-related changes in anatomy are compatible with the predictors of a difficult airway. We hope that these age-related anatomic approaches will prospectively allow a detailed understanding of the hallmarks resulting in geriatric-focused difficult airways in the future studies.The elderly population is gradually increasing. The importance of evaluating the difficulty in endotracheal intubations before anesthesia in the elderly has been increasing. Delays in endotracheal intubation can cause fatal consequences due to limited organ reserve and comorbid conditions with aging. Although the evidence is still limited, previous studies have shown the elder patients predisposing to have difficult airwayHowever, the impact of age-related anatomic changes on the occurrence of difficult airway in the elders is not yet clear. Hence, this article was driven to review the age-related

changes in anatomy, and its relations with the hallmarks of difficult airway in the elderly.

Introduction:

A focused literature search with consultation from a professional librarian was performed on data from January 1972 to December 2016. References of identified studies were also checked for relevancy. Hand-searches of relevant journals were also performed. Many national airway guidelines emphasize the importance of a thorough and skilled assessment of all patients requiring airway management.A complete airway evaluation should include predicted ease or difficulty of a tracheal intubation, as well as predicted success of fallback options to achieve oxygenation, and a surgical airway.Experts believe that difficult airways occurring with the following procedures: tracheal intubation, face mask ventilation, supra-glottic placement, and surgical airway access (though it is not limited to these descriptions).

For the patient requiring a tracheal intubation, an airway evaluation is performed primarily to help decide if the intubation can be safely performed after the induction of general anesthesia or if the intubation should proceed with the patient awake.The predictors of difficult direct laryngoscopy consists of a chin protrusion,a limited mouth opening, limited mandibular protrusion,narrow dental arch,decreased thyromental distance,modified Mallampati decreased submandibular compliance,5 decreased sternomental distance limited head and upper neck extension and increased neck circumference.

The predictors of difficult face mask ventilation include having a higher body mass index or weight,older age,male sex, decreased thyromental distance, modified Mallampati, beard, lack of teeth,history of snoring or obstructive sleep apnea limited jaw protrusion,history of neck radiation

Accordingly, most the predictors of difficult airways count on the anatomical variation.3, 5, 7, 12, 26 As the number of predictors of difficulty increases, the probability of actually encountering problems rise.5, 22, 26 Furthermore, aging changes body structure, so the elderly is prone to structural and functional changes surrounding the airway. A craniofacial growth does not

stop in young adulthood, but it is a continuous process even into later ages.27, 28 Degenerative, pathological, or post-treatment changes are accompanied with changes over a person's life. For example, difficult airways may be the result of dental attrition, dental loss, atrophy of alveolar bone, temporo-madibular joint (TMJ) disc displacement and osteoarthritis, and head and neck joint changes.29, 30 Hence, difficult airways are considered in elderly patients.

Age-related changes in anatomy and the implication of difficult airways:

1. Age changes in teeth

Experts believe that teeth are exceptionally useful in determining a person's age.40 Interproximal attrition, cementum regeneration, in combination with comparing of the amount of dentine formation, the position of the epithelium of attachment, and the size and shape of the pulp cavity to previous produced data from teeth of a known age, teeth are exceptionally useful in determining a person's age

Changes in the teeth are resulted from incremental effects of wear, disease, and aging. Occlusal wear may be due to attrition (tooth-on-tooth contact), abrasion (tooth-on-food contact, or contact with other foreign bodies), or erosion (acid, aspirin, vitamin C, or gastric juice). Interproximal attrition between the upper and lower teeth may result in the loss of as much as 1 cm from the overall arch circumference by the age of 40.

Cementum deposition persists throughout the life. While the superficial cementum ages, a new layer of cementum is deposited to keep the attachment of intact teeth to the jaw. However, the thickness of apical cementum, which determines the length of the teeth, is approximately tripled between the ages of 10 and 70 years.

The attrition of the molar cusps and cementum regeneration enable the lower jaw to move forward relative to the upper jaw, tending to establish an edge-to-edge occlusion of the incisors and to appear chin protrusion, which is a factor of difficult intubation.

2. Age changes in jaw bones and temporomandibular joints

Alveolar bone undergoes atrophy and jaw resorption when several teeth are removed.1 Dental loss in the lower jaw often results in a thin mandible, and an atrophy of the muscles of mastication.1 The bulk of the masseter and medial pterygoid muscles significantly reduce with age.33

During the post-extraction healing period, the loss in width of the alveolar ridge is greater than the loss in height. The loss of the posterior teeth results in an over-closure of the oral cavity. If all of the teeth are lost, the lower gums and upper gums that cannot come into contact with each others; however, this ultimately becomes possible due to the stretching of the ligaments and capsules of the TMJs.

The prevalence of disc displacement and osteoarthritis of the TMJ increases with age.36 Osteoarthritis of the TMJ is characterized by an erosion and flattening of the condylar surface, perhaps leading to a locked jaw.37 Although most patients with TMJ disorders experienced mild distress, the erosion and flattening of the condylar surface restricts the function of the jaw in the elderlyIn addition to the changes of the condyles by age, the evaluated predictors of difficulties are regarded to the number of teeth lost on either side, but not associated to the degree of ocular attrition or cusp surface change.35

The age-related disc displacement and osteoarthritis of the TMJ limits mouth opening, which is one factor of difficult intubation.The mandible resorption and alveolar remodeling diminishes the jaw and causes a concave appearance in the check retraction and drooping,41 which is a typical appearance of an aged face, and also a predictor of difficult mask ventilation (in our preliminary data).

3. Age changes in the oral mucosa

With age, the oral mucosa becomes thin, smooth and dry with a loss of elasticity and stipplingThese changes are probably the result of changes in the epithelia and dermisThe decrease in proliferative activity of the fibroblasts, proteoglycan synthesis, protein and collagen synthesis, the change in clonal heterogeneity in fibroblast phenotypes, and a thickening of collagen and

elastin fibers may reduce the flexibility and resilience of the oral cavity with age.46 The age-related changes of the oral mucosa may limit the mouth opening, and results in difficult intubation

4. Age changes in bones and joints

Bone loss in the elderly is largely the result of excess osteoclast activity, possibly resulting from a decline in estrogen, dietary vitamin D deficiency, age-related reductions in the efficiency of 1-α hydroxylation of vitamin D, and insufficiency of sunlight exposureSpinal osteoporosis causes progressive height losses and kyphotic deformities in the elderly.

The functions of mammalian synovial joints mostly depend on the properties of the articular cartilages, which cushion the sub-chondral bone and provide a low-friction surface that is necessarily for free movement. With age, articular cartilage thins because of decreases in water content, depletion of cartilage proteoglycan, and chondrocyte apoptosis The cartilage surface starts to break down and reduces its ability to maintain and repair itself. Thus, these contribute to age-related degeneration and the development of osteoarthritis.

The tensile strength of tendons and ligaments-bone complexes also declines with age, probably resulting from a reduced synthesis and post-translational modification of collagen Neck and back stiffness are common in the elderly, and are likely due to age-related changes of intervertebral discs. The diameter of the nucleus pulposus reduces with age, and the hydrostatic pressure increases within the annulus, which compresses the discs more and narrows the intervertebral space. These factors decrease the height of an individual and limit the range of motion of the neck, spine and peripheral joints.

The age-related kyphosis, neck stiffness and spinal osteoarthritis limit neck and atlanto-occipital movement, which are the factors of difficult intubation.

5. Age changes in the neck

The cervical spine and pharynx change significantly with age. In the elderly, the overall height of the cervical spines is reduced, while cervical lordosis increases.Pharyngeal muscles are prone to atrophy with aging.Sarcopenia, the age-related reduction of muscle mass and associated strength, is also

observed in the elderly. Since the pharyngeal lumen is comprised of pharyngeal muscles and the base of the tongue (forms the anterior border of the hypopharynx), the size of the pharyngeal lumen at rest appears to increase, while pharyngeal muscle thickness decreases with age.60 Additionally, the sarcopenia of the head, neck and suprahyoid muscles in the elderly further change the relationships of the larynx to the pharynx.

Age-related cervical lordosis increases the difficulty of tracheal intubation The changes of the relationships of the larynx to the pharynx in the elderly may influence the laryngeal exposure during tracheal intubation, which is the dominant factor of difficult intubation and difficult supra-glottic device.

Discussion and conclusion

Aging changes the structure and function surrounding the airways. Many these age-related anatomic changes overlap with the predictors of difficult airways. Here, we have summarized and compared the age-related anatomic changes with the anatomical predictors of encountering difficult airways.

Previous studies have showed the preoperative patients who had difficulty in endotracheal intubation were elder than those who were not. Because the characteristics of the patient enrolled, the mean age of the patients with difficult airways were around fifth or sixth decade predisposing to have difficult airways, which is compatible to that head, face, and neck morphological modifications continue through the life, and become evident around 50 years of age.63 Nevertheless, in one study divided and with equal case numbers in young, middle, and old age groups, the anatomical predictors of difficult intubation, such as head and neck movement, dentition, and cervical joint rigidity, and so on significantly impacted the difficulty of tracheal intubation in each group In the same study, the older age groups had higher Cormack-Lehane grade (grade 1-2 usually standing for easy intubation compared to grade 3-4 for difficult intubation), and predisposed to have the appearance showing difficult intubation, when compared to the young age group In another study further showed increasing age, increasing the incidence of difficult mask ventilation and/or difficult intubationConversely, the only study having 44.69% emergency patients aged more than 65 years showed the younger patients had higher possibilities of a difficult airway,

which against the results of most the other studies. The high proportion of the cases with trauma and crash airway in young age group ($P < 0.001$) may have impacted the results significantly.

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A CRITICAL REVIEW ON SHIRYATE ITI SHARIRAM IN RELATION WITH SHARIRSTHANA OF CHARAKA AND SUSRUTA

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Abstract:- The term Sharir is defined in Charaksamhita by Chakrapani as 'Shiryate iti shariram'. It means 'that which is undergoing degeneration'. This is further clarified by Chakrapani in the successive lines by interpreting term 'Shiryate' under two aspects 1) degeneration as the natural tendency of body 2) external factors adversely affecting the dosha resulting in vitiation or degeneration. Natural way of degeneration of body has to be viewed along with the vision of Ayurveda regarding birth,life and death.Ayurveda visualize birth as delimiting the gross cosmic consciousness into the Panchamahabhoota resulting in the formation of Garbha.Life is the phase of expansion of the consciousness in order to return back from where it comes from.Death occurs when this process of expansion completes and that triggers the liberation of the cosmic consciousness back into the universe.Hence,the term 'Shiryate' here imparts an idea of hope rather than despair. Infact, it reflects the ultimate aim of Ayurveda ie, Moksha.

INTRODUCTION

The word 'Sharir' is derived from root word 'Shru' dhatu.It means 'to decay' or degenerate.In Charaksamhita Sutrasthana, while describing the general approach and aim of the book in the very first chapter,Chakrapani gives the description about 'Sharir' as 'that which goes on degeneration'[1].Also,in Bhagavat Gita 'Sharir' is described as 'that which is undergoing degeneration

day by day'[2].While going through the literature of Ayurveda,one can notice that the derivation of every single word reflects the vision of Ayurveda rather than its mere vocabulary sense.One may find very strangeful that,the mode of presenting the fundamental terms of Ayurveda is quite unique in nature.In most of the Samhitas,the basic terms are introduced as a mere statement in Sutrasthana rather than describing it in detail in a chronological order. Literature in Ayurveda upholds a fashion that, further description are evolving out in successive chapters based on the contexts. In the introduction of Dosha, Agni, Dhatu etc. we can see this fashion.The term 'Sharir' is also described in a similar way only.

REVIEW OF LITERATURE

Eventhough the term 'Sharir' was introduced in Sutrasthana,the detailed description of the same can only be found in Sharirsthana of both Charaka and Susrutasamhita.According to Ayurveda, Sharir or living body is considered as Atmasamyukta. Here, Ayurveda have introduced a unique concept of Purusha.Purusha is the human body with Atma residing in it.Thus we can infer that Sharir can be called as Purusha during one's life span only.Susruta considers this Purusha as the abode of treatment[3].

The origin of human body is through Garbha and this occurs as a result of the union of Shukra,Sonita and Jivatma in the mother's womb.Then it develops into Sharir by the proper action of five Mahabhootas.Vayu divides the Samyukta bija into various Angapratyangas both Sthula and Sukshma.Apa provides fluid materials to the developing body. Tejobhuta helps in the digestion, assimilation and formation of new organs and structures. Prithvibhuta provides the solid nature to its constituents and growth is promoted by Akasa bhuta by providing space[4].

Charaka defines Sharir as the ideal conglomeration of Pancham ahabhootavikar and Chetana. Panchamahabhootavikar implies to Saptadhatu, Tridosha and Trimala[5].

Sushruta in Sutrasthana described the components of Sharir as Tridosha, Saptadhatu and Trimala[6].

In short, Panchamahabhoota and Atma are considered as the root components of human body or Purusha, since Dosha, Dhatu and Mala are formed of Panchamahabhoota only.

Dosha and Panchamahabhoota

Vata-Vayu and Akasa

Pitta-Tej

Kapha-Jala and Prithvi

Dhatu and Panchamahabhoota

Rasa-Ap tatva

Rakta-Agni tatva

Mamsa-Prithvi tatva

Meda-Ap and Prithvi tatva

Asthi-Prithvi, Vayu, Tej and Akasa

Majja-Ap tatva

Shukra-Ap tatva

Mala and Panchamahabhoota

Mutra-Ap tatva

Purisha-Prithvi tatva

Sweda-Ap tatva

In the derivation of Sharir, 'Shiryate iti' one may felt that the description conveys a negative feel of thought at the very beginning ie, the degeneration. But while analysing the literature of Susruta Samhita Sharir Sthan, we can infer the philosophical approach of Ayurveda towards Sharir. The Sharir formation or the birth is considered as delimiting the gross cosmic consciousness into a miniature form ie, the individual.At the end of the life,further expansion of consciousness back into the cosmos happens and the

physical body disintegrate and merge into Panchamahabhoota occurs.The liberation of this consciousness is considered to be the Moksha and is regarded as the very basic aim of Ayurveda.There is a need of certain time to make this process of expansion happen and that span of time in between the two processes is said to be one's life.So, infact during the life, Sharir is being prepared for the liberation.These preparational changes in life are influenced under the three Dosha.The Kapha dosha influence the Shrishti and the growth, attaining maturation and sustainment under the influence of Pitta and the phase of senescence is influenced by Vata[7].

Even the Rasayana Chikitsa described in Ayurveda are not meant for offering immortality. The purpose of Rasayana is not to make you live long, but it enhances the quality of tissues, so as to kick start the above said spiritual evolution of returning back to the cosmos[8].In otherwords, Rasayana is not adding years to life,but adding life to years. So, we can say that the goal of Rasayana is Kalamrityu itself.

The word 'Shiryate' implies to discarding the body rather than simple dying. Ayurveda visualize death as a celebration of salvation and not as a failure of the health system. To make capable of bringing each individual up to the liberation of soul is the ultimate goal of Ayurveda.

CONCLUSION

The fundamental principles of Ayurveda have importance all through the times.Eventhough there happened a lack of updation in the surgical procedures in accordance with the time,the foundation principles are valid even in the present times.The unique idea of visualising Sharir or Purusha as mutual conglomeration of Panchamahabhoota with Atma proposes an individualistic approach.This marks the main difference between Ayurveda and rest medical sciences.Delimiting the entire cosmic consciousness into Panchamahabhoota Sharir is happening at the time of Garbha .Further on,expanding this inherited consciousness all through one's lifetime and discarding the body at the end,by merging back into the cosmic consciousness determines a successful life.

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8. Na kevalam deerghamihayurashnute rasayanam yo vidhivannishevate

gatim sa devarshinishevitam shubham prapadyate brahma tetheti chakshayam

(Ch.Chi.1/1/80)

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CONTROLLING MEASURES FOR GERIATRIC DISEASE

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Abstract:- Ageing is a process of physical, psychological and social change in multi-dimensional aspects. Ayurveda has the potential for disease prevention by health promotion and noncommunicable disease prevention. The focused branch Rasayana (rejuvenation) or Jarachikitsa promote healthy longevity. Jarachikitsa and Rasayana methodologically delay vruddhavastha (ageing) and reduce geriatric degeneration. Vruddhavastha begins at 60-70 years. We discuss lifestyle recommendations such as smoking cessation, exercise, Yoga, Rasayana therapy and good nutrition. Jarachikitsa or Rasayana is a unique therapeutic methodology to delay ageing and to minimize the intensity of problems occurring this degenerative phase of one's life. Future aging can be reduced before the occurrence of old age. In fact, the ideal time for treating the geriatric problems is youth. Adherence to discipline in youth keeps the geriatric problems away. By adopting a healthier lifestyle, the risk of noncommunicable chronic disease can be reduced. The Government of India launched a national campaign to popularize the strength of Ayurveda and Yoga in geriatric health care. It is the demand of the hour to develop an effective holistic protocol for geriatric care by combining Rasayana, Panchakarma, Dietetics, Ayurvedic medicines, lifestyle and Yoga is timely.

Keywords:- Ayurveda; Geriatric; Rasayana; Yoga.

Introduction:–

The biologist defines ageing as the "The sum total of all changes that occur in a living organism with the passage of time and lead to a decreasing ability to survive stress, functional impairment and death." If the functional capacity at the age of 30 is taken as 100% (sampoornata in Ayurveda) then there is a measurable decline at 60 yrs1. According to the hindu mythology, there has been a progressive decline in human life-span from krutayug – 400 yrs, tretayug – 300 yrs, dwaparyug – 200 yrs, kaliyug -100 yrs.

Ayurveda divides human life into2 Balyavastha, which extends up to age 16 yrs. Tarunyavastha, which extends from age 16 to 60 yrs. Vriddhavstha wherein after 60 to 70 yrs the body elements, sense organs, strength, energy, manhood, velour, memory, understanding speech and discrimination begin to decay.

The purpose of the present article is to enlighten the basic concept of jara Chikitsa and rasayan therapy with respect to geriatrics. With this one can be able to identify the stage be able to control/ slow down/ arrest the process of ageing during the process of ageing during the degenerative phase in one's life.

Material and methods –

The main ayurvedic texts used in this study are samhita Grantha. For modern concept of geriatrics, referred textbook of modern medicine, searched various websites and reports to collect the information on relevant topics.

Discussion -

Signs and symptoms of ageing are the strength and energy of man dwindle day by day, the organs and virility become weak, the hair turns silvery white and begins to fall off and the parched skin looks shriveled. Skin sags down and becomes flabby; The respiration becomes labored and pain full etc. The leading cause of mortality among aged people comprises respiratory problems, heart diseases, cancer and stroke. Significant cause of morbidity among this group is chronic inflammatory and degenerative conditions such

as Arthritis, Diabetes, Osteoporosis, Alzheimer's disease, Depression, Psychiatric disorders, Parkinson's disease and age-related urinary problems.

Rasayana therapy3 is a specialized branch of clinical medicine in Ayurveda aimed at preventing effects of ageing. It attains longevity, improved harmony and intelligence, freedom from disorders, youthful vigor and excess of luster, complexion and voice, optimum strength of physique and senses, command over language, respectability and brilliance.

Preventive and Curative Measures for Geriatrics

Acharya Charak says "He, who treats the disease before its commencement or at an early stage, experiences long-lasting happiness". Geriatric problems are best confronted by preventive measures than curative ones. Therefore, geriatrics has to be treated much before the commencement of old age. The ideal time for treating the old age problems is youth. Discipline in young age prevents geriatric problems. By adopting a healthier lifestyle, the risk of a whole range of diseases can be reduced. These factors are diet and nutrition, exercise, weight, smoking and alcohol, social activities.

Diet and nutrition - With increasing age, people become more prone to malnutrition for many reasons4 including - Arochaka (Anorexia), Smritinash (Dementia), Manoavasada (Depression), Stroke, Kampavata (Parkinson disease) and other neurological disorders, delayed gastric emptying. The diet should be regulated taking into account the habitat, season, age, and according to one's digestive capacity5.

Concept of Rasayana (rejuvenation)- Rasayana has broad meaning indicating qualitative and quantitative improvement of dhatu (tissues). Vayasthapana are specialized rasayana drugs that reverse degenerative changes, increase life span with quality health6. The main utility of Rasayana therapy is in functional and degenerative disorders that have a chronic or long-standing nature. In such cases, in fact, rasayana is the only solution from the point of view of effective management in any system of medicine. Rasayana becomes more fruitful and effective, if it is preceded with suitable Panchakarma (purificatory therapy). The reason we see mixed results in

many cases where Rasayana is employed is because of the fact that, either this purification is not done or improperly done.

Exercise- Exercise helps to control weight, improve emotional well-being and relives stress, improve blood circulation, flexibility. Regular yogic exercise from youth limits the effects of old age7.

Benefits of the geriatric yoga: Yoga provides a good balance, blood stream and tissue liveliness thanks to the enhanced flexibility and core stabilization. If the person attends the Geriatric Yoga programme regularly, many problems, which are caused by age, can be prevented8. It is possible to reload the most essential brain functions with the relaxing characteristic of Yoga. It reduces sympathetic activity with relaxing techniques. Pain, fatigue, depression and stress decrease with relaxing response. Memory becomes retentive9.Yoga has found a place as an alternative medicine approach within geriatric and rehabilitation programmes in developed countries in Europe and in the US owing to its countless beneficial effects and it has started to be practiced to improve physical health, to inform, to cope with and to support in various supportive programmes10. The following longevity promoting yogic practices should be performed only under the guidance of qualified Yoga therapist. Asanas: Surya Namaskar, Pavanamuktasana and Shavasana etc. Pranayama: Nadisodhana, Kapalbhati, Bhramari etc. Mudras: Khechari mudra removes diseases and old age problems. Dharana, Dhyana, Swadhyaya and Iswara Pranidhana.

Cutting down smoking and alcohol - Drinking is linked to liver diseases, stomach ulcers, gout, depression, osteoporosis, heart disease, and hypertension. Sensitivity to the effect of alcohol increases with the age11.

Social activities- Mixing with other people of similar age, at similar stage of life or perhaps with similar health concerns, can help people realize that they are not alone. The elderly need not always be seen as care receivers. They can be resource too - Transmitters of culture, care of grandchildren (storytelling, playing), counselors to the young couple, they had vast and varied experiences, helps in problem solving and trouble shooting.

Conclusion -To live a long and healthy life is every individual's wish. Due to changing lifestyle and thus not able to follow the rules of dietetics human beings have led to an emergence of varied problems for the elderly in India. It is obvious that the process of ageing was elaborately described in ayurvedic texts and a separate medical discipline called Rasayana tantra was developed which described a variety of methods and measures to promote healthy longevity. Undoubtedly, it is the strength of ayurveda in the context of geriatric care Rasayana is a therapy which bestows excellent rasa which ultimately results in promotion of longevity, alleviation of old age and diseases so as to enjoy the full span of life. Government of India has also launched a national campaign to popularize the strength of Ayurveda and Yoga in geriatric health care. It is the demand of the hour to develop an effective holistic protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines and lifestyle and Yoga.

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CONTROLLING MEASURES FOR GERIATRIC DISEASES

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Abstract:- Aging is the process that reduces the number of healthy cells in body; therefore, the body loses its ability to respond to a challenge (external or internal stress) to maintain homeostasis. Ayurveda science has addressed geriatric health issues under a heading "Jara". In Ashthang Ayurveda "Jara" is incorporated at 7th number among its eight branches. "Rasayan Tantra" a special branch of medicine in Ayurveda, exclusively devotes to "Jara Janya Vyadhi". Ayurveda science basically aims at promotion of health of individual and management of diseases. That's why the foremost classic of Ayurveda, the Charakasamhita begins its Chikitsasthana with Rasayanachikitsa. Use of Rasayan therapy in "Jara Janya Vyadhi" works at primary level of our biological system as well as it saves the patient from side effects of modern medicine. It is the demand of the hour to develop an effective holistic protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines, lifestyle and Yoga is timely.

Key words:– Aging, Rasayan, Senile diseases, side effect, Yoga

INTRODUCTION:

Jara is state of becoming "Ksheen" (debilitated), physically and psychologically weak as a result of old age usually after 60 years of life.

In India 3.8% of the population are older than 65 years of age. Ayurveda has the potential for disease prevention by health promotion and

noncommunicable disease prevention. The focused branch Rasayana (rejuvenation) or Jarachikitsa promote healthy longevity. Jarachikitsa and Rasayana methodologically delay vruddhavastha (ageing) and reduce geriatric degeneration. Vruddhavastha begins at 60-70 years. The lead-ing causes of mortality among aged people comprise respiratory problems, heart dis- eases, cancer and stroke. Significant causes of morbidity among this group are chronic inflammatory and degenerative conditions such as arthritis, diabetes, osteoporosis, de-pression, psychiatric disorders, Parkinson's disease and age related urinary problems.

Ayurveda, the Indian traditional holistic health science has got the potential for prevention of diseases by promotion of health and management of diseases occurring in old age. It has a focused branch called Rasayana (Rejuvenation) which deals with the problems related to ageing and methods to counter the same.(2,3)

Jara hetu:

Kalasya parinam – swabhawaja or essential by Charak

Charak in description of Rasayana, describes that indulgence in "gramya ahara" leads to agnimandya, vataprakopa and dhatukshaya. Thus it is important factor for premature aging

Two major factors responsible for aging are:

1. Srotorodha
2. Agnimandata.

PROBLEMS IN VRUDDHAVASTHA:

Physical problems:

The following are some very common physical disorders of the old age:

- Cardiovascular - hypertension, MI, CCF
- Respiratory - asthma and bronchitis
- Musculoskeletal - osteoporosis
- Gastro-intestinal - dyspepsia and flatulence
- Genito-urinary - prostate enlargement

- Locomotor system - osteoarthritis, rheumatoid arthritis, gout
- Endocrinological - diabetes is one of the major endocrinological problems found in old age.
- Ophthalmic - senile cataract and glaucoma are very common in old people
- Hearing - loss of hearing and hard hearing are the major hearing problems of old age
- Nervous - insomnia is commonly found old age problems
- Cancer - Cancer incidence and severity increases with age
- Menopausal - in addition to all these, ladies experience menopausal health disorders
- Features of jara:
- Sharirshaktiheena- regression of physical capacities
- Smiritinasha – diminishing memory
- Manasik glani – loss of cheerfulness and alertness
- Balinam – appearance of wrinkles
- Palitya – greying of hair
- Dantashaithilya – loosening of denture
- Swabhava vaipparya – change in personality components.
- Kasa swasa pravritti – proneness to repeated coughs and dyspnoea on effort
- Sarvakriya asamarthata; loss of physical, perceptual and mental faculties
- Features of vatavriddhi are found as permanent features in old e.g.
- Vakayaparushta
- Karshya
- Gatrasfurana
- Nidranasho
- Alapbalatvam
- Ghadvirchissaya.

SPECIAL CONSIDERATIONS IN OLD AGE

Multiple illnesses (medical and psychiatric), multiple problems (social, financial, family), communication difficulty, sensory impairment, need for

collateral sources of information, risk of drug side effects, atypical presentation of disease.

PREVENTIVE AND CURATIVE MEASURES FOR GERIATRICS

Geriatric care through ayurveda:

Physical care: through proper swasthvritta, dincharya, ritucharya, yoga,

Biological care : through required balanced diet, vitamins, essential minerals, specific drugs and rasayanas like ashwagandha, chyavanprash, amritprash, shilajeet, medhya rasayana, pranakameeya and other ayushyakameeya rasayana.

Mental and spiritual care: mangal, prani sadvritta, aachar rasayana, aparigrha, family support

Social care : By society and government through economic support, old age care home, free travelling and health insurance, legal support, terminal care. Care through NGO's

Acharya Charak says "He, who treats the disease before its commencement or at an early stage, experiences long-lasting happiness". Geriatric problems are best confronted by preventive measures than curative ones. Therefore geriatrics has to be treated much before the commencement of old age. The ideal time for treating the old age problems is youth. Discipline in young age prevents geriatric problems. By adopting a healthier lifestyle, the risk of a whole range of diseases can be reduced. These factors are diet and nutrition, exercise, weight, smoking and alcohol, social activities.

Diet and nutrition:

With increasing age, people become more prone to malnutrition for many reasons [8] including - Arochaka (Anorexia), Smritinash (Dementia), Manoavasada (Depression), Stroke, Kampavata (Parkinson disease) and other neurological disorders, delayed gastric emptying. The diet should be regulated taking into account the habitat, season, age, and according to one's digestive capacity [4].

Following points may be considered while planning/advising dietary and other lifestyle regimen.

- The food should be tasty, nutritious, fresh and good in appearance.
- Too spicy, salty and pungent food should be avoided.
- It should neither be very hot nor very cold.
- Liquid intake should be more frequent and in small amount.Heavy food can be prescribed in a limited quantity.
- Heavy food should not be given at night. The proper time for night meals is two to three hours before going to bed. After dinner, it is better to advice for a short walk.
- Heavy physical work should be avoided after meals.
- Mind should be peaceful while eating.
- Eating only whenever hungry and avoidance of over eating.
- Inclusion of sufficient amount of vegetables and fruits in diet.
- Daily intake of vegetable soup and fruit juices.

Role of Panchakarma in Geriatric care:

In Ayurveda Panchkarma have its own five bio-purificatory processes with rejuvenates activity. In geriatric practice an Ayurvedic physician uses selective rehabilitative Panchkarma therapy avoiding the drastic evacuator practices like Vamana and strong Virechana procedures. The schedule in the elderly should consist of medicated mas-sage, sudation, Kayaseka, Pindasweda, Si-rodhara and Brimhana Basti suitably planned for each individual. Such a package could appropriately considered 'Geriatric Pancakarma'.

Concept of Rasayana (rejuvenation)

Rasayana has broad meaning indicating qualitative and quantitative improvement of dhatu (tissues). Vayasthapana are specialized rasayana drugs that reverse degenerative changes, increase life span with quality health. The main utility of Rasayana therapy is in functional and degenerative disorders that have a chronic or long-standing nature. In such cases, in fact, rasayana is the only solution from the point of view of effective management in any system of medicine. Rasayana becomes more fruitful and effective, if it is

preceded with suitable Panchakarma (purificatory therapy). The reason we see mixed results in many cases where Rasayana is employed is because of the fact that, either this purification is not done or improperly done.

The beneficial effects of different Rasayana drugs for geriatric care are as follows:

- Ashvagandha and Shilajatu enhance mental attentiveness and reduce stress.
- Achara Rasayana improves psycho immunomodulator effect.
- Gambhari promote tissue formation since it balances amino acid consumption.
- Guggulu enhances activity of Shrotas thus improves nutritional supply and circulatory process.
- Amalaki possesses antioxidants effect thus restrict tissue free radical mediated tissue damage.
- Amalaki, Haritaki and Guduchi enhance immune power thus prevent age related diseases.
- Bhasma containing Rasayana offers rejuvenating effects and enhances longevity
- Sallaki (Boswelia serrata) in Rheumatoid Arthritis (RA)

Ashwagandha (Withania somnifera) on the process of aging: Root powder of Ashwagandha (Withania somnifera) was administered in the dosage of two tablets three times daily with milk for one year showed statistically significant increase in haemoglobin, RBC count, hair melanin and seated stature and decrease in serum cholesterol and ESR [6].

Multi-facetted protective role of Chyawanprasa: Chyawanprasa showed significant immunomodulatory activity (decrease in Ig G, C3 and C4 levels in patients of recurrent cough and cold), cytoprotective action (cancer patients receiving radiation therapy showed a protective role against radiation induced tissue damage) and Genoprotective action (significant reduction in Mitotic Index (MI) and Chromosomal Aberrations (CA) [7].

Other compound formulations that are available in the market with a multipronged action are being listed below:

Amalaki Rasayana for Ageing:

Amalaki Rasayana consisted of Amalaki, Goghrita, Madhu and Khanda Sharkara. It offers vaya sthapana effects, possess Madhura Rasa, Snigdha, Guru, Sheeta and Mrudu property along with Madhura Vipaka thus provides Vatapittahara effect resulting enhanced digestive power, mental compatibility and immunity etc.

As per modern science Amalaki Rasayana consisted of vitamin C and ascorbic acid thus provides antioxidant property. Amalaki Rasayana control symptoms of early ageing and decrease severity of pathological conditions like; constipation, insomnia and fatigue. It believes that Amalaki Rasayana along with milk help greatly in the management of ageing ailments. The chief ingredients of Amalaki Rasayana offers beneficial effects like; Agnivardaka, Chakshushya, Twaka varnakara, Balya and Buddhi vardakya.

Medhya Rasayana in Ageing:

Medhya Rasayana such as; Yashtimadhu churna, Shankhapushpi kalka, Mandukaparni swarasa and Guduchi swarasa are organ specific, prevents aging related brain ailments, promotes neural tissue regeneration and provides adaptogenic, antistress and memory enhancing properties.

Brahma Rasayana for Geriatric Care:

Ayurveda recommended that use of Brahma Rasayana help in delaying ageing process. Brahama Rasayana consisted of Amalaki, Bala, Jeevniya panchmoola, Shatavari, Gokshura and Madhuyashti etc. These ingredients provide Dhatuposhana effects, pacify age related Vata vitiation and boost process of tissue’s nourishment. Brahama Rasayana posses Rochana, Dipana & Pachana Karma due to their Guru, Snigdha Guna and Madhura rasa thus improves Dhatv-agni and reduces formation of Ama. Brahama Rasayana helps in dhatu regeneration process and enhances anabolic activity than catabolic activity thus controls early manifestation of ageing. (8)

Triphala Rasayana for Geriatric Care:

Triphala Rasayana acts on Agni, Dhatu and Srotas, etc thus offers longevity and rejuvenation. Triphala Rasayana boosts immunity and restores normal

health status by protecting from pathological conditions. Triphala along with Tugaksiri, Madhuka and Pippali help to restore young age, keep away from infectious disease, improves Smriti, Medha and Bala. (9)

Mandukaparni swarasa:

Mandukaparni swarasa act as neuroprotectives, affects neural behavior, prevent neural impairment and relief ageing symptoms.

Yashtimadhu churna:

Yastimadhu (Glycirrhiza glabra) increases circulation of CNS system, boosts learning, improves memory and thus relief age related symptoms of dementia.

Guduchi swarasa:

Guduchi improves memory, provides antioxidant and anti-stress properties prevent physiological ailments related to infections.

Vayasthapana Medicine:

Amrita, Dhatri, Abhya, Mukta, Jeewanti, Aprajita, Shatavari, Sthira, Punarnava and Mandookparni are considered Vayasthapana medicine which offers anti ageing property. These drugs offer anti-ageing property; nourishes skin, improve physiological functioning, maintain youthfulness and balances Doshas.

Exercise:

Exercise helps to control weight, improve emotional well-being and relives stress, improve blood circulation, flexibility. Regular yogic exercise from youth limits the effects of old age [19].

Benefits of the geriatric yoga:

YOGA: Yoga provides a good balance, blood stream and tissue liveliness thanks to the enhanced flexibility and core stabilization. If the person attends the Geriatric Yoga programme regularly, many problems, which are caused by age, can be prevented

- The person gains experience with his own existence, body andmental performance during the sessions in Yoga practices. He learns to control his body. He analyzes his emotional status about his problem. He gains ability to cope with the symptoms faced
- It reduces sympathetic activity with relaxing techniques. Pain, fatigue, depression and stress decrease with relaxing response. Memory becomes retentive

Yoga has found a place as an alternative medicine approach within geriatric and rehabilitation programmes in developed countries in Europe and in the US owing to its countless beneficial effects and it has started to be practiced to improve physical health, to inform, to cope with and to support in various supportive programmes; to help people on issues such as pain, fatigue, stress, nutrition, exercise, sleep and patient caring.

The following longevity promoting yogic practices should be performed only under the guidance of qualified Yoga therapist.

Asanas: Surya Namaskar, Pavanamuktasana, Ardha Matsyendrasana, Bhujangasana and Shavasana.

Pranayama: Nadisodhana, Kapalbhati, Bhramari, Neti, Bhastrika and Tratak.

Mudras: Khechari mudra removes diseases and old age problems. Dharana, Dhyana, Swadhyaya and Iswara Pranidhana.(10)

Cutting down smoking and alcohol:

Drinking is linked to liver diseases, stomach ulcers, gout, depression, osteoporosis, heart disease, and hypertension. Sensitivity to the effect of alcohol increases with the age (11)

Social activities:

Mixing with other people of similar age, at similar stage of life or perhaps with similar health concerns, can help people realize that they are not alone. The elderly need not always be seen as care receivers. They can be resource too - Transmitters of culture, care of grandchildren (storytelling, playing),

counselors to the young couple, they had vast and varied experiences, helps in problem solving and trouble shooting.

CONCLUSION

To live a long and healthy life is every individual's wish. Due to changing lifestyle and thus not able to follow the rules of dietetics human beings have led to an emergence of varied problems for the elderly in India. It is obvious that the process of ageing was elaborately described in ayurvedic texts and a separate medical discipline called Rasayana tantra was developed which described a variety of methods and measures to promote healthy longevity. Government of India has also launched a national campaign to popularize the strength of Ayurveda and Yoga in geriatric health care. It is the demand of the hour to develop an effective holistic protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines and lifestyle and Yoga.

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ANATOMICAL CHANGES IN GERIATRICS

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Abstract:- Aging is a gradual, continuous process of natural change that begins in early adulthood. During early middle age, many bodily functions begin to gradually decline. The major changes carried out in the body during these stages are, growth, achievement, maintenance and decay. Thus, aging is the process of decaying and this manifests in the form of various degenerative changes.

Vriddhavastha or Jirnavastha (old age), which refers to the period after 60 or 70 years.[1-3] Thus, every person will pass through a period when various decaying changes will take place, and this time period is known as Vriddhavastha.

During this phase there is predominance of Vaayu Dosha (one of the three physiological body factors). The major physical changes seen at this time are wrinkling of skin, graying of hair, baldness, and a diminishing ability to do physical work.[4] The diseases that complicate this stage are Kasa (cough), Shwas (asthma), and soon.

Keywords: Geriatrics, Vriddhavastha, Anatomical changes.

Introduction:

Several types of principles have been described in Ayurveda. A person interacts with various factors, for example, other Panchabhautik (manifested) creations, living or non-living. It is known that at the base of all creation, there are nine Dravya, (causative factors)[5] : that is, Panchamahabhuta (space, air, fire, water, and earth); Mana (mind); Atma (soul); Kala (time); and Disha (directions). Panchamahabhuta provide the basic structure for all the manifestations and this manifested creation, is known as the universe. The universe resides within the limitations of Kala and Disha in a clockwise manner.

Kala interacts with a human from conception till death and this time period is called Ayu (lifespan). On account of the interaction of Kala, various changes occur in the body during the period of Ayu; these are natural and cannot be changed. According to the type of changes that occur, the lifespan has been divided into three parts, also known as Vaya (various stages of life); these are Bala (early stage of life), Madhya (middle stage of life), and Jirna or Vriddhavastha (later stage of life).

AIM AND OBJECTIVES:

To re-evaluate, discuss, and elaborate the various concepts and principles related to anatomical changes in geriatrics.

MATERIALS AND METHODS

ANATOMICAL CHANGES:

Changes in Posture and Appearance:

Postural changes in aging include a stooping forward, with head tilted backward and knees, hips and elbows flexed. Body proportions change with age as shoulder width decreases and the chest, pelvic and abdominal areas increase in diameter. Some structural changes are due to bones losing calcium and some are due to changes in musculature. The trunk shortens as intervertebral distances narrow. The centre of gravity moves from the hips to the upper torso, affecting balance.

Changes in Body Composition:

Body composition also changes with age. By age 75, body fat increases by 16% and body water decreases by 8%. Lean body mass declines by about 15% over the life span, although this is not uniform. As the muscles become more rigid, inspiratory and expiratory muscle strength decreases, causing reductions in both ventilation and vital capacity. The rib cage also becomes more rigid and costal cartilage becomes calcified. Muscles, such as the diaphragm, have to be used more for expiration than they were previously. The anterior diameter of the chest increases.

Changes in the Cardiovascular System:

Although cardiac enlargement occurs in some older adults, this is not a proven age-related change. The left ventricle does become about 25% thicker, and myocardial elasticity de-creases. Fat infiltration occurs, connective tissue decreases and lipofuscin (aging pigment) appears in cardiac cells.

Changes in the Gastrointestinal System:

The tooth enamel does thin and teeth do become brittle. Saliva production decreases in the mouth, causing xerostomia (dry mouth). The taste buds decline in number and there is a decrease in the sense of taste, thought to be greater in men and in smokers.

The gag reflex decreases. In the oesophagus, decreased peristaltic activity and relaxation of the lower oesophageal sphincter cause delayed emptying and an increased risk of aspiration. In the large intestine, the musculature weakens, peristalsis decreases and nerve sensation diminishes.

Constipation is a frequent complaint in the elderly, and may occur due to normal age-related changes, poor diet and reduced exercise or mobility. One third of persons over age 60 show diverticulosis of the sigmoid colon. Liver size decreases after age 70, as does hepatic enzyme concentration. Gallbladder emptying becomes more difficult with age. Bile decreases in amount and becomes thicker. The cholesterol content of the bile also increases.

Changes in the Genitourinary System

Kidney size decreases with age, the number of nephron units decreases.

The capacity of the bladder decreases by about half in old age; frequency and nocturia increase. It is more difficult to empty the bladder due to weakening of the bladder and peri-renal muscles. Large amounts of urine may be retained. In men, increased frequency or dribbling can result from a weakened bladder or enlarged prostate. The pelvic diaphragm, often weakened in childbirth, may cause stress incontinence in women with age.

Changes in the Neurologic System

The size of the brain may decrease by as much as 7% with age. Cerebral blood flow and oxygen use decreases. This change may be more severe in men than in women. Neurons are lost with age. This is most prominent in the cerebral cortex, which loses about 20% of its neurons. The aging pigment, lipofuscin, appears in the cytoplasm. The hypothalamus be-comes less effective in regulating heat production and heat loss. Regardless of whether or not dementia occurs, senile plaques and neurofibrillatory tangles develop. The fact that monoamine oxidase and serotonin levels increase and norepinephrine levels decrease may contribute to the increased de-pression seen in older adults.

Changes in the Endocrine System

In the pituitary, the vascular network decreases and connective tissue increases, without functional change. For some rea-son, the secretion of follicle-stimulating hormone increases in postmenopausal women but remains unchanged in men.

Changes in the Musculoskeletal System

Since muscle cells are not replaced in the adult, muscle mass decreases. Although strength tends to increase up to age 40, it will decline about 10% to 20% in old age.

Changes in the Visual Sensory System

By age 40, many people begin to need glasses. The multiple structural changes seen in older people are known as presbyopia. Discoloration, opacity and rigidity of the lens may lead to cataract formation. Changes in the lens and vitreous humor may cause decreased visual acuity. Glaucoma may occur due to the decreased depth of the anterior chamber and reduced aqueous humor resorption. The pupil becomes smaller, reducing the amount of light striking the retina, and the eye's ability to adapt to darkness decreases.

Changes in the Immune System

The thymus gland begins a progressive involution (degeneration) beginning at puberty. By age 50, only about 5% to 10% of the mass of the thymus remains, and by age 60, no thymic hormones are produced. The natural antibodies decrease in number, whereas autoantibodies increase, causing a greater risk of autoimmune disease.

DISCUSSION:

Aging is a natural phenomenon, but nobody wants to grow old — a dilemma that everyone faces. In Ayurveda, every condition (whether transient or persistent) that leads to a disturbance of homeostasis is termed as a disease. Thus, Vriddhavastha has also been considered as a disease: It is categorized under the head of natural diseases. These natural diseases are due to Swabhava (nature) and depend on kala (time).

Anatomical changes significantly observed in Posture and Appearance, Body Composition, Cardiovascular, Gastrointestinal, Genitourinary, Neurologic, Endocrine, Musculoskeletal, Visual Sensory & Immune System.

CONCLUSION:

Anatomical changes significantly observed in Posture and Appearance, Body Composition, Cardiovascular, Gastrointestinal, Genitourinary, Neurologic, Endocrine, Musculoskeletal, Visual Sensory & Immune System.

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REVIEW OF ANATOMICAL CHANGES IN GERIATRICS

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Abstract:- Ageing is a Natural process that occurs to every Human being. It brings physical, psychological and social changes over a period of time. It is a gradual and continuous irreversible process in which the body's cell, the tissue starts to deteriorate and further it leads to loss of functions as well as increased risk of death. The geriatric age group that is the old age people, ageing over time bring various anatomical changes in various systems of the body such as cardiovascular, Respiratory, Urinary, Nervous system Etc. This change leads to various diseases found in elderly. The geriatric disease like Arthritis, osteoporosis, cataract, enlarge prostate gland Etc. which can disturb the day-to-day life of old people. They have to depend on others even for the simplest task. management and prevention of geriatric diseases, we should know the changes that occur by the ageing of the body.

Keywords:- Geriatrics, ageing, anatomical changes.

INTRODUCTION:

Ageing is the natural inevitable process. It is described in both Ayurveda as well as in Modern science. In Ayurveda it is described as Jara , the Ayurveda has 8 branches that are Kaya (Internal Medicine), Bala(Pediatric), Graha

(Science of demonic sizer that is psychology), Urdhanga (The diseases occurs in supraclavicular region), Shalya (Surgery), Jara (Geriatric or Science of Rejuvenation), Brusha (Science of Aphrodisiac) Drsamsta.[1] Acharya Sushruta mentions jara in group of naturally occurring disease named svabhava bala roga, which included Kshudha, Pipasa, Nidra, Jara and Mrityu.[2] the aim of Ayurveda is cure of disease and promotion of the health. In modern science ageing is mentioned as a natural irreversible process which brings physical, psychological & social changes over a period of time, it is a gradual and continuous process in which the body's cell, the tissue starts to deteriorate and further it leads to loss of functions as well as increased risk of death. Environmental factors like stress, nutrient deficit diet can accelerate the process of ageing. Management and the prevention from ageing we should know the natural changes occurs by the ageing.

MATERIALS AND METHODS

Classical texts of Ayurveda viz. Charaka, Sushruta and Vagbhata Samhita with commentaries were consulted as references of jara. Literature available regarding anatomical changes from various journals, books and internet were collected.

CHANGES OCCURRING DURING OLD AGE:

Cardiovascular System

The blood vessel because of ageing becomes less flexible, stiff and less responding towards the hormones which relax the valves of the blood vessels results in the higher blood pressure. due to lipid deposition and collagen degeneration, valves of chamber of heart become thick and stiff. Capillary thicken slightly which may cause slow rate of exchange of nutrient and wastes. [3,4]

Respiratory system

In old age rib cage losses, its mobility because of calcification of ribs that make chest wall stiff along with larynx and trachea. lungs become rigid due to loss of elasticity and increase in the fibrous tissue. the respiratory unity of lung is alveoli enlarges in size and vital capacity decreases.[5]

Musculoskeletal System

People lose bone mass or density as they age, especially women after menopause. The bones lose calcium and other minerals. spine is made up of vertebrae between two vertebrae there is intervertebral disc with ageing it start to degenerate, the spaces between the vertebras reduces leads to shorting of the trunk. Arthritis is common painful condition that occurs with age and leads to reduced mobility of joint. The posture may become more stooped. The knees and hips may become more flexed. The neck may tilt, and the shoulders may narrow while the pelvis becomes wider.[6]

Gastrointestinal system

Stomach shrinks because of the inflammation of mucosa called atrophic gastritis. Stomach produces less quantity of acid due to lack of vitamin B12 this acid deficiency called as achlorhydria. loss of control of internal and external anal sphincter in the old age can be uncomfortable to the person [7]

Endocrine system

The endocrine system is a complex network of glandular tissues that secrete hormones directly into the blood which are used by target organs of the body. Insulin resistance may prohibit the conversion of glucose into energy in elderly.

Urinary system

Kidneys helps in blood purification, waste removal and fluid balance of the body. The size and function of the kidney begins to decrease in forty year of age and significantly decreases by sixty years. [8] The urinary bladder with age is characterized by a decrease in storage capacity and urinary flow, increase in residual urine and frequency.

Nervous system and sense organs

The aging of the central nervous system results in irreversible loss of functions and decrease in ability of doing normal functions. Memory problems are increased after the age of 40 years [9]. Reflexes, sensory and motor responses of the body become slow. Visual and hearing impairment are

very common in elderly people. The labyrinth and vestibule begin to degenerate with age and older individuals may complain loss of balance. As the age progresses there is changes in lens of eye which leads to cataract.

Reproductive system

In female menopausal age is considered as 51 years. At menopause ovulation ceases and oestrogen levels falls by 90% [10]. Women are more susceptible for osteoporosis after menopause. Vaginal wall becomes thin due to delicate epithelium. Women experience decrease in lubrication of vagina. After 30 years of menopause FSH and LH levels falls down slowly which causes loss of muscular tone of breast. Rate of sperm production and size of testes is decreases with aging. There may be reduction in sex drive and erectile dysfunction affecting 42% of the adults between the ages of 40 and 60 years.[11] The prostate gland enlarges with age as some of the prostate tissue is replaced with a scar like tissue. This condition, called benign prostatic hyperplasia (BPH), BPH may cause problems with slowed urination and ejaculation. [12]

Skin

Elder persons generally have thin skin. Atrophy of the epidermis occurs with age and it is predominantly found in exposed areas of neck, face, upper part of the chest, and outer parts of the hands and forearms. Dermal collagen becomes stiff. These changes cause the skin to lose its tone and elasticity, resulting in wrinkling. Hair becomes grey because of the decrease in melanin production. Nails develop striations and grow slowly [13].

DISCUSSION AND CONCLUSION

Ageing is the natural process which occur to every human being. It is gradual and continuous process; one should desire for natural ageing which further contribute to the happier future. Factors like stress, sedentary life style, Nutrient deficit diet led to fast Ageing which can causes changes in the body early as compare to the natural ageing, complications of the early physical changes can lead to various diseases. Exercise, good dietary habits, proper rest can delay the changes of aging for curtain period of time.

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ANATOMICAL CHANGES IN GERIATRICS

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Abstract:- Geriatrics is a field of medicine that deals with the challenges of ageing and illnesses that affect the elderly. Ageing is a normal part of life. No amount of research/development using medical science instruments can preserve mankind from its current state of ageing. Many research on this age group found an increased fear of sickness, sadness, and death. The population of the elderly is quickly increasing in emerging countries due to a variety of factors.Aging is a life-long process that involves gradual anatomical changes in the body's System. The planned research will detail different anatomical changes that occur in old age. The ageing process causes changes in every system of the body, including the circulatory, respiratory, gastrointestinal, urinary, neurological, endocrine, reproductive, and musculoskeletal systems.

Keywords:- Age, Geriatrics, Anatomical changes etc.

INTRODUCTION

Ageing is a gradual state that begins with conception and ends with death. Over the last several years, the world's population has continued on its notable transition route from a state of high birth rate to a state of low mortality rate due to improvements in health care and living standards. As a result, the old population in society continues to grow.1 Gerontology is a field of research that studies the social aspects of ageing, as well as the policies that govern them. Acharya Charaka stated that the average human life duration is one hundred years, however life span is decreasing alarmingly; today it is believed to be 70 years. Aging is described as the natural process of life that is marked by the degradation of organs in diverse systems, resulting in the loss of anatomical structure2. There is no convincing evidence availablewhichshows that administrationofanyspecific drug can slow aging process 3, butAyurveda gives special emphasis on the care of Jara(aging) and Jara vyadhi (disease ofelder) by including special branch 'Rasayana' in AshtangaAyurveda.Since then, researchers have worked hard to reframe ageing as a normal, healthy, and good part of life.4 The proposed essay would go over natural anatomical changes occurred in particular age.

METHODS AND MATERIALS

Classical Ayurvedic books with comments, such as Charaka, Sushruta, and Vagbhata Samhita, were used as references of Jara. Literature on anatomical changes was gathered from different publications, books, and the internet.

CLINICAL ANATOMICAL CHANGES OCCURRING DURING OLD AGE

Anatomy of CardiovascularSystem

Blood vessels stiffness and become less responsive to hormones that relax vessel valves, resulting in an increase in systolic blood pressure. The valve in the chamber of the heart thickens and stiffens as a result of lipid accumulation and collagen degradation6. Cardiac muscle stiffens as a consequence of connective tissue alterations, reducing responsiveness to catecholamine, the chemical receptors that monitor blood pressure, and resulting in hypertension.

Anatomy of Respiratorysystem

The mobility of the ribs decreases as a result of rib calcification, and the chest wall, as well as the larynx and trachea, stiffens in the elderly. The cilia that line the trachea and assist drive dust, debris, and mucus up into the pharynx become less effective. Because of the lack of elasticity, the lungs become stiff.7 As a result, ventilation and gas exchange are compromised, resulting in decreased respiratory flow. The Anatomical changes in lung alveoli expands as vital capacity declines.

Anatomy of The Digestive System

Atrophic gastritis is an inflammation of the mucosa that causes the stomach to atrophy in old age. Because of a shortage of vitamin B12, the stomach produces inadequate acid, resulting in acid deficit known as achlorhydria.8 The colon becomes hypotonic, resulting in higher food and stool storage capacity, prolonged stool transit time, and increased stool dehydration. All of these causes contribute to persistent constipation. Constipation can also develop as a result of decreased stomach output and slowed peristalsis movement. One of the most painful events in old age is the loss of control of the internal and external anal sphincters.

Anatomy of The urinary system

The kidneys are the primary organs in control of regulating the chemical composition of blood and the fluid content of the body through the production of urine. The size and anatomical changes in kidney begin to decline around the age of forty, and decline considerably by the age of sixty 10. The urinary bladder deteriorates with age, resulting in a decrease in storage capacity and flow, an increase in leftover urine, and an increase in frequency.

Anatomy of The nervous system and the sensory organs

The ageing of the central nervous system causes permanent anatomical structural changes and a decline in capacity to perform routine activities. Memory difficulties become more prevalent after the age of 40. Body reflexes, sensory and motor responses all slow down. Visual and hearing

impairments are prevalent among the elderly.11 The iris becomes stiffer when tear production decreases, resulting in dry eyes. Night vision is impaired due to the lower pupil size and cone number. The tympanic membrane thickens, and the ossicles degenerate.With age, the labyrinth and vestibule tend to deteriorate, and elderly people may complain of lack of balance. Smell sensation eventually fades owing to a reduction in smell receptors. Taste deteriorates with ageing due to taste bud atrophy. The sense of touch deteriorates with ageing.

Anatomy of Musculoskeletal System

Reducing of muscle mass and muscle atrophy, decreasing bone density, raising the collagen levels increasing body mass which leads to sarcopenia.Osteoarthritis degenerative joint disease occurs when the cartilage of joint deteriorates and new bone is formed at the joint surface. The loss of cushioning material causes pain and joint stiffness with accompanying loss of movement over time. Fractures caused by osteoporosis skeletal metastases from other primary cancers and trauma are major contributors to morbidity in the elderly.

CONCLUSION

Age causes many anatomical changes. These changes frequently result in health issues and even mortality in the elderly. To ensure the health and well-being of this growing age group, it is critical that health care professionals, the government, the community, their families, and the elderly themselves understand the changes that are occurring and adapt preventive measures to avoid the various types of anatomical changes in our body at the appropriate time. All of these activities will assist to reduce the risks associated with ageing.

Many research on this age group found an increased concern of sickness, sadness, and death. Normally, age is associated with anatomical structural changes in systems. The population of the elderly is quickly increasing in emerging countries due to a variety of factors. So, providing medical facilities for such a huge population, especially in our nation with inadequate

medical services, is a significant issue. This age can be improved by adopting a good attitude about life.

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ANATOMICAL SENILE STRUCTURAL CHANGES IN AYURVEDA-A STUDY

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Abstract:- Old age population in the world is increasing and the global population of the world will be comprised of 60% of elderly by the year 2050. Countries like India, despite havig huge population will increase upto 20% of elderly as the young population in the country has started ageing must faster than expected leading to have 34 crore people above 60 plus[1], According to ayurveda the main three factors related to ageing are diet, sleep and celibacy[2]. Various anatomical disorders and structural weakness are common entities seen in old age with respect to chronic diseases. As age advances, changes take place in appearance even in the condition of agni, doshas, dhatus malas and ojas. Due to this life expectancy in old age people is becoming a major concern. Ayurveda has a separate branch of medicine called JARA CHIKITSA dealing with degenerative phase of life with management and prevention [3].

Keywords:- Ageing, Ayurveda, prakrthi, kala, avastha, ojas.

INTRODUCTION

Ageing can be defined as a progressive accumulation through life of random molecular defects that builds up within tissues and cells. Senility is a part of life where the dhatus and all indriyas of the body undergo degeneration. Random molecular damage is made by reactive oxygen species produced during metabolism of oxygen to produce cellular energy.weakness of muscles, joints and stability associated due to loss of nutrition with nutrition deficiency disorders are more common[4]. Ayurveda is a branch of

Atharvaveda which emphasis more on longevity, prevention and treatment of diseases. Ayurveda emphasises on agni as major cause of roga. In old age, all dhatus undergo shithila (weakness) and degenerative changes are seen in organs and bony joints of the body. The senile changes also include loss of strength, mental weakness with memory loss, loss of muscle tone and rigidity. Breakdown of joints leading to inflammation, pain, stiffness and deformity as the common occurences in old age [5].

MUSCULO SKELETAL CHANGES

The most obvious physical changes are seen in skin. The dermal and epidermal layer becomes thinner due to decrease in supportive collagen and loss of subcutaneous fat. So the skin becomes sagging and seen with wrinkles. Senile purpura is very common due to loss connective tissue support for capillaries and small vessels. Joints become laxity due to wear and tear in excess causing inflammation. Crepitus in joints becomes a common feature in ageing. Frequent fractures and dislocation are common in people with osteoporosis [6]. Fractures are termed as bhagna in ayurvedic perspective and its prognosis is krcchrasadhya (difficult to cure) among young, elderly and weak patients [7].

According to Ayurveda, according to charaka there are six layers of twak (skin). He has named the first two as udakadara (bahyatwak) and astrikdhara and has not named the remaining four layers. Sushruta has described the same in seven layers viz. avabhasini, lohita, shweta, tamra, vedini, rohini and mamsadhara. Avabhasini, the outermost layer, reflects the complexion and the quality of the Rasa Dhatu (nutrient fluid, the first of the seven tissues of the body). It also acts as a mirror as it indicates whether the physiology as a whole is balanced or imbalanced, and whether there is inner health or disorder; it also reflects the aura of the individual. Mamsadhara is the innermost layer is the platform for the skin's stability and firmness. When this layer is in balance, the skin looks young and supple. A skin product that has a vayasthapana (antiaging) effect nourishes this layer to help retard the aging process. Vata skin which is dry, thin, fine pored, delicate and cool to touch tends to develop wrinkles earlier than the other skin types. Pitta skin which is fair, soft, warm and medium thickness is photosensitive and has least

tolerance to sun and is most likely to accumulate sun damage over the years. Kapha skin which is thick, oily, soft and cool to touch tends to develop wrinkles much later in life than Vata or Pitta type but because of its thickness and oiliness, is more prone to accumulate ama (toxins) under the skin[8]. Among different kalas, MAMSADARA KALA can be compared to muscle sheaths. It consists of branches of sira, snayu and dhamani. During old age, these fascia becomes inflamed and stiff or has decreased shearing ability[9]. With ageing joint movements becomes stiffer and less flexible because of the synovial fluid decreases and the cartilage gets thinner [10]. SLESHMADARA KALA can be compared to the synovial membrane. The kapha in all joints are regard to sleshamadara kala. As like the wheel easily glides upon a well-greased staff, the joints moistened by sleshma contained in these sacs permit easy movements [11].

CARDIOVASCULAR SYSTEM

Adults age 65 and older are more likely than younger people to suffer from cardiovascular disease, which is problems with the heart, blood vessels, or both. Aging can cause changes in the heart and blood vessels that may increase a person's risk of developing cardiovascular disease. There is increase in incidence of irregularity in cardiac rhythm with decrease in sinus arrythmia and increase in P-R interval on ECG. The cardiac output is reduced upto 50% of normal by the age of 80 with decrease in myocardial contractiblity. Hypertension arises due to rise in systolic and diastolic levels with advancing age. Coronary heart diseases are common in senility due to plaque formation in heart valves [12].

According to Ayurveda, Hrdaya is the special seat of Sadhaka Pitta, Avalambaka Kapha and Vyana Vayu [13]. Pranavaha srotas and rasavaha srotas are the srotas having origin in the heart (hrdaya) and they are 2 in number carrying rasa and the dhamani. Any morbidity to this srotas will cause sosha (emaciation), twitching, delusion(moha), vertigo, tremor or even death [14]. Vataja hrcchula can be compared to ischemic heart disease and atherosclerosis. Since the pain corelation along with inflammation is similar. Clinical manifestations of heart disease have been described in to two parts. Firstly, the common clinical features have been ennumerated which are likely

to be present in all types of heart diseases. Secondly the distinguishing features of different types of Vataja, Pittaja, Kaphaja, Sannipataja and Krmija have been dealt with. Majority of the features are constitutional symptoms. A list of these signs and symptoms is given below with their modern equivalence. From their study it seems that the symptoms encountered today in relation to heart disease are already included in Ayurvedic classic [15]

TABLE NO.3.1 Samanya Laksana (Common Features) of Hrd Roga

Ayurvedic Term	**English Term**	**Ayurvedic Term**	**English Term**
Ruja	Pain	Murcha	Syncope
Kasa	dysponea	hikka	hiccough
Swasa	cough	kaphotklesa	nausea
Asyavairasya	badtaste	jwara	fever
trsna	thirst	pramoha	stupor
vaivarnya	change in colour	-	-

CONCEPT OF AGEING IN AYURVEDA

Ageing is known as jara which is defined by “jiryati iti jara”. Ayurveda divides human life into—childhood (up to the age 16 years); youth and middle age [from 16 to 60 years (charaka) or 70 years (sushruta) and exhibits progressively the traits of growth (vivardhamana, 16–20 years of age), youth (youvana, 20–30 years), maturity (sampoornata, 30–40 years), deterioration (parihani, 40 years onwards) which gradually sets in up to 60 years]; old age, wherein after 60–70 years the body elements, sense organs, strength, and so forth. begin to decay [16]. Decrease in dhatu with respect that eventually afflictling ojas, thus reducing the immunity and strength. Displaced ojas leads to kapha related disorders whereas decreases ojas creates vata related disorders thus eventually causing afflicting the prana. The aggravated prana produces degenerative disorders in the dhatus [17]. In Ayurveda, Ageing and anatomical features are based on prakruthi of particular person. A Man of nabhasa prakruthi is pious, LONG LIVED and has long ears. A man of parthiva prakruthi has large height, firm, strong and muscular limbs. Pittaja

prakruthi has loose limbs and yellowish in colour and his skin looks ugly with wrinkles and has moderate strength and lives upto MIDDLE AGE. Whereas vataja prakruthi persons are SHORT LIVED seen with cracks on his palm and soles and dry moustache and hairs. A man of kaphaja prakruthi has white eyes and strong in nature [18]

Table 4.1 Phases of Life and sequential biological changes [19]

Age/Phases of Life	Dosas	Dhatus	Agni	Ojas
Young Age *Kapha* dominant	Kapha ↑↑ Vata Optimum Pitta Optimum	+ + +	+ +	+ + +
Adult Age *Pitta* dominant	Pitta ↑↑ Vata Optimum Kapha Optimum	+ +	+ + +	+ +
Old Age *Vata* dominant	Vata ↑↑ Kapha ↓Depleted Pitta ↓Depleted	+	+	+

CONCLUSION

Lifestyle changes and proper following trayopastambha (three pillars of life) are essential to maintain a happy and youthful life. Ayurveda considers aging as a natural and inevitable process and offers time-tested therapies for healthy aging. Ayurveda professes the principles of harmonious living and being in tune with nature, universal consciousness, environment, and individual constitution. Healthy aging would therefore require for the individual to bring in harmonious impressions, incorporate healthy lifestyle practices and routines that promote good health and well-being, and encourage healthy transformation of the body and mind through harmonious choices and actions.

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ANATOMICAL CHANGES IN HUMAN CRYSTALLINE LENS WITH SPECIAL REFERENCE TO PRESBYOPIA – A CRITICAL REVIEW

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Abstract:- Eyes are one of the most susceptible organs which are affected as an aging process and Presbyopia is one such disease. Presbyopia, or age-related farsightedness, has been linked to alterations in the lenticular (lens and capsule) and extra-lenticular (ciliary body and muscle) accommodative apparatuses. The crystalline lens undergoes significant age changes that contribute to the progression of presbyopia. After 60 years of age, the human crystalline lens gradually loses its ability to undergo accommodative changes with mechanical stretching and fails to undergo accommodative changes in focal length. In Ayurveda, these visual disturbances are described under Drishtigata roga of eyes and more importantly Timira-Kacha-Lingnasha complex. The concept of herbal Chakshushya dravya (Food beneficial for eyes), Rasayana and Kriyakalpa (local therapeutic procedures) can prevent the progression of Presbyopia and delay the aging process.

Keywords:– Presbyopia, Lens, Timira, Kriyakalpa

INTRODUCTION

Presbyopia is an accommodative error of eyes which develops with growing age and is more common in societies having larger proportion of older population. With growing age, the human crystalline lens losses its elasticity, becomes harder and the ciliary muscles and suspensory ligaments weakens. This leads to poor accommodation resulting in difficulty in viewing near objects clearly. In Ayurveda, these visual disturbances are described under Drishtigata roga of eyes and more importantly Timira-Kacha-Lingnasha complex. The symptoms of Prathama patalagata Timira (Avyakta Darshana i.e. blurring of vision) and Dwitiya patalagata Timira (Suchipasham na Pashyate i.e. unable to see small objects) resemble to the clinical features of Presbyopia.

AIMS & OBJECTIVES

1. To review the anatomical changes occurring in human crystalline lens with growing age.
2. To review the anti-aging effect of Chakshushya dravyas, Rasayana and Kriyakalpa on Human crystalline lens.

MATERIAL AND METHODS

3.1. Healthy human crystalline lens structure and suspensory ligaments,

The Human lens is a clear, biconvex, crystalline structure positioned between the iris and the vitreous in the patellar fossa, a saucer-shaped depression. It has a diameter of 9-10 mm and a thickness that fluctuates with age, ranging from 3.5 mm at birth to 5 mm as an adult (at extreme of age). Its weight ranges from 135 milli-grammes (0-9 years) to 255 milli-grammes (10+ years) (40-80 years of age). It has two surfaces: the anterior is less convex than the posterior (radius of curvature 10 mm) (radius of curvature 6 mm). At the equator, these two surfaces meet. It has a 1.39 refractive index and a total power of 15-16 D. The lens has accommodative power varying with age, ranging from 14-16 D (at birth) to 7-8 D (at 25 years of age) to 1-2 D (at 50 years of age) (at 50 years of age). The lens's architecture and cellular contents are critical to its transparency. The transparency and high refractive index of

cells in the lens are induced by the tight packing of their proteins, which provides a constant refractive index over distances close to the wavelength of the transmitted light.

Lens suspensory ligaments (Zonules of Zinn) also known as ciliary zonules, are made up of a series of fibres that run from the ciliary body to the lens. These keep the lens in place while allowing the ciliary muscle to work on it.

3.2. Aging effect on human crystalline lens

There are three stages of age related changed in the crystalline lens development growth and aging.

3.2.1. Physical changes-

- Lens weight and thickness increases steadily with age. It results due to continued growth of the crystalline lens throughout life building up layers of new cells from the equator.
- The inability of cells in the encapsulated lens to be replaced, combined with the inability of lens cell proteins in nonnucleated fibre cells to turn over, makes the lens particularly vulnerable to damage from ageing and environmental insults such as UV light and other oxidative stresses. This causes a decrease in light transmission and focusing even in normal aged lenses, so that the intensity of light reaching the retina is reduced by about 10-fold by the age of 80 years.
- Although the human lens is colourless at birth, it gradually becomes yellowish with age, most likely due to the production of 3-hydroxykynurenine and other tryptophan metabolites that filter UV light.
- With growing age, vacuoles and multilamellar bodies form between lens fibre cells, occasionally disrupting the fibre plasma membrane. Furthermore, the majority of the elaborate cytoskeletal structure found in lens cells disappears with age, resulting in presbyopia by the fifth decade, with loss of the ability to accommodate.
- Light Scattering is increased with the age. It has been reported to be caused by aggregation and formation of a gel- like state.

3.2.2. Metabolic changes -

Most of the metabolic activities of the lens decreases with age. The proliferative capacity of human lens epithelial cells declines during adult life. Many enzyme activities decline in the whole lens with age. There occurs an increase in the urea- soluble protein at the expense of soluble proteins, on-going from cortex to nucleus.

3.2.3. Changes in Crystallines –

There occurs an age- related loss of γ- crystallines. The γ- crystallines fraction in particular shows an increase in disulphide bonds age. These occurs a limited unfolding of bovine γ- crystallines with age.

3.2.4. Changes of Plasma membrane And Cytoskeleton –

There occur age-related losses of membrane proteins and lipids and of cytoskeletal proteins. A loss of membrane potential and an increase in lens sodium and calcium occurs with age. Changes in membrane rigidity- also occur with aging.

3.3. Management

- Intake of Chakshushya ahara i.e. Shali, Godhuma, Mugda, Saindhava, Go-ghrita, Go-dugdha, and Kshodra.
- Intake of Chakshushya aushadha dravya and Chakshushya Vargai.e. Triphala, Shatavari, Yava, Patola, Karpura, Rakta Chandana, Kasturi, Lavanga, Prapondarika, Yashtimadhu, Kokilaksha, Gambhari etc.
- Kriyakalpa i.e. Ashchyotana, Seka, Anjana, Tarpana, Putapaka, Pindi, Vidalaka,
- Nasya karma
- Chakshushya Basti
- Trataka Yoga Kriya and Eye exercises

RESULT AND DISCUSSION

Presbyopia is an eyesight of old-age occurring after 40 years of age in which the lens becomes less elastic, more thickened and suspensory ligaments become weak resulting in poor accommodation. In Presbyopia, the subject

faces difficulty in near vision while having normal far vison and asthenopia symptoms like eyestrain, headache, intermittent diplopia etc. The symptoms of Presbyopia resemble with the clinical features of Prathama patalagata Timira and Dwitiya patalagata Timira. Ayurveda plays a very important role while dealing with age related disorders. Presbyopia can be prevented by regular use of Chakshushya dravas, Chakshushya Ahara and by following Vihara beneficial for eyes. It can also be cured by using Kriyakalpa (local therapeutic procedures), Nasya, Chakshushya Basti etc. Trataka Yoga Kriya and Eye exercises are also very beneficial in relieving the asthenia symptoms. These treatment modalities provide better nutrition to the eyes and strengthens the lenticular and extra-lenticular structures such as suspensory ligaments, ciliary muscles etc.

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THE CLINICAL & SURGICAL PERSPECTIVE OF TRI-MARMA

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Abstract:- Marma is one of the special aspects deeply elaborated by Ayurveda. Marma are several vital points on the body having importance regarding traumatic effect. These points when exposed to trauma generate the symptoms from pain to fatal effect. These points should be protected from injury. On the other hand, these marma are considered as healing points. Marmachikitsa provide tridosha trigunasamanway (equilibrium) as these points are seat of prena. The word marma first finds mention in Atharveda. During the Vedic kala the science was prevalent probably because of war period, marma shastra got a new outlook as a science dealing with Marmasareera and Marmabhighata. Marma is also explained as the anatomical area where the five – principle anatomical structures Mamsa, Sira, Snayu, Asthi, and Sandhi are collectively present. It is the concentrated point of Prana, which gives its vitality. It is a site where pulsation is felt and pain on pressure exists. The present studies reveal the medical & surgical Importance of tri marma in the literature with clinical and surgical point of view.

Keywords:- Marma, Marmabhighata, Trimarma, Prana, Traumatic injury.

INTRODUCTION

Ayurveda literally means traditional science of life. [1] Ayurveda believes complete normal state of mental and physical health. Marma (vital points) is one of the important aspects described in various ancient texts of Ayurveda.

“Marmaninama Mamsa Sira Snayusthi Sandhi Sannipatha:

Knowledge of marma has been used since long time in surgery. Aacharya Sushruta defined marma as the vital points of the body which shows various fatal signs and symptoms on traumatic injury. [2] Depending upon traumatic effects and prognosis various types of marmas mentioned in Ayurveda as follows. [3]

1. Sadhyapranahar (Sudden Death)
2. Kalantarpranahar (Death Within Short Period)
3. Vaikalyakar (Deformity Due to Trauma)
4. Vishalyaghna (Person Lives Until Removal of Foreign Body)
5. Rujakar (continuous pain due to trauma)

These are superficial and deeply seated points in the body which involves:

1. Dhamani (Artery)
2. Sira(Vein)
3. Asthi(Bone)
4. Mamsa(Muscle)
5. Snayu(Ligament)
6. Sandhi(joint)

Where prana (vital energy) resides or flows through. [4] In spite of great importance, there is no direct mention of therapeutic use in Ayurvedic literature. Now a day special therapy that is marma therapy evolved. Marma therapy involves utilization of these points for the purpose of abhyanga (gentle massage with oil) and mardana (massage). Marma points can be used to balance the tridoshas (basic components) at physical level and trigunas at

mental level. With respect to trigenas. The medical and surgical point of view related to the trauma and injury as well as injury to these points may lead to complication and sometimes death of the person. Ayurveda is the oldest medical science which deal physical and psychological health of human been. The classic vital energy termed as pran which emphasis in equivalence to subtle life force energy for existence of mankind. The understanding of term pran is important in the clinical and surgical point of view. [5] The term pran is present all over body but still it pedigree being embedded in specific location of human composition such a gathering of fine fundamental human structure that is mansa, sira, snayu, asthi and sandhi is one such distinctive locations explained in the text where the vital force energy is residing. These specific locations are explained as concept of marma shareer in Ayurveda. Acharya Sushruta is very well known for his better contribution in field of anatomy and Shalyatantra. The concept of marma has been developed during the time of war in those time it might be the reason that marmas was given at most important in Samhita. [6]

Aim & Objective

To study the clinical & surgical knowledge of Marma in Ayurvedic literature with respect to modern science.

DISCUSSION

Various Ayurvedic texts are referred and modern texts critically overviewed for the said subject to elaborate as well as to understand significance of marma in clinical and surgical aspects. Hrudya, Basti and Shir are the Tri marma described by Acharya Charak. The incidences of Hridaya Roga increasing day by day due to the modern lifestyle, dietary habits, stress and smoking habits etc. Ayurveda described various marma's vital points including Hridaya (Heart), Shira (head) & Basti (bladder). Out of these Hridaya is one of the most important Marma,which is also a Pranayatana and Moolsthan of Rasa & Rakta Vaha Srotas. Anciently ayurveda mentioned Hridaya Marma means protection and nourishment of Hridaya. Hridaya Marma as explained in Ayurvedic Samhitas. Itrelated with Vayu, Sadhak Pitta, Avalambak Kaph & Ojhas. Prevention of Hridaya Rogais possible by Hridaya Marma Paripalanam i.e. protecting & nourishing the Hridaya Marma

which is also explained classically. [7] Hridaya or heart is a Sira Marma (structure), located in the Madhya Shareera or Uras (located in the thorax) and is a Sadhyo Pranahara Marma (effect of injury is immediate death) Vasti (urinary bladder) is a Snayu Marma (structure), located in the Madhya Shareera or Udara (located in the abdomen) and is a Sadhyo Pranahara Marma (effect of injury is immediate death). Basti Marma includes Urinary Bladder, Hypogastric Plexus & Ureters so these are the vital parts of body and injury to these part may lead to shock and sometimes death. Shir, Basti, Gud, and Hruday are also described as sadhyapranhar marma and also described by Acharya Charak as the tripod of life i.e. tri-marma in Ayurveda Samhita. It is important for life that's why it is said as trid and in Ayurveda instead of lung basti is added as, the part of tri-marma. Injury to any of this marma may lead to fetal death. Heart, lung and brain are the tri marma described by Acharya Charak. Acharya Vaghbhata considered marma as the points where special and unusual pulsation felt. [8] Trauma may lead to shock (marmabhighat) that is described in modern as the condition of shock. Which may lead to the common signs and symptoms of shock (Exogenous Traumas) on marma points.

1. Convulsions (Vikshepa)
2. Extreme weakness of body (Daurbalya)
3. Absent mindedness (Shunyata)
4. Giddiness (Bhrama)
5. Shivering (Vepana)
6. Relaxation of body parts (Shaithilya)
7. Burning sensation in cardiac region (Hrid-daha)
8. Disliking to stick at one point (Asthirata)
9. Unconsciousness (Moha)

This all lead to the condition which is described as shock in the modern sciences. Shock can occur due to failure of one or more component of system pump (cardiogenic), conduction pathway (obstructive), resistance (vasogenic) and content (hypovolemic).

Dysfunction of the organ system can manifest as one or more of following Brain injury may present with change in mental status: either depressed

sensorium or agitation. Heart injury may cause myocardial dysfunction can occur even in noncardiogenic forms of shock.

Renal trauma may manifest as a reduction in urine output either due to preranal failure (low perfusion pressure) or due to acute tubular necrosis either because of hypotension or another associated process such as disseminated intravascular coagulation.

Trauma to lung may causes reduction in perfusion pressure causes inadequate perfusion in ventilated alveoli (a high V/q pattern). This pattern increases dead space. The systematic reduction in perfusion can also lead to respiratory muscle fatigue and hypoventilation.

CONCLUSION

Human body when exposed to trauma shows various sign and symptoms depending on severity and types of trauma. Acharya Sushruta mention 107 deep or superficial points on body surface when get traumatized produce various sign & symptoms not only on the basis of type of injury but on the basis of its constituents. Our physic comprises vessels, muscles, bones, joints, nerves, ligaments etc. everywhere in more or less proportion. According to Acharya Sushruta, the point where all the above structures meet and is the site of prana (vitality) is nothing but marma. Agni- SomaVayuare also basic components of marma10. Depending on this composition, traumatic effects develope. Ayurveda emphasized on anatomical knowledge as part of diagnosis and treatment. The surgical interventions needed great consideration of anatomical perspective, any misconception regarding anatomical framework may lead failure of medical procedure. This article described tri Marma points which need to be cover while injury or shock to prevent fatal conditions. Life and health depends on two on proper action of heart lung and brain.

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SHIRYAT ITI SHARIRAM

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Abstract:- जातस्य हि ध्रुवो मृत्युः ध्रुवं जन्म मृतस्य च | भ.गी.२/२७

For one who has taken his birth, death is certain; and for one who is dead, birth is certain. Therefore, in the unavoidable discharge of your duty, you should not lament.

This is the process of catabolism and anabolism occurring each and every second at biochemical level in everyone's body. Same process is explained as

शीर्यत् इति शरीरम् | चक्रपाणि

Depending upon the rate of anabolism and catabolism we observe 3 phases of life: Balyavastha , Madhyamavastha and Vridhavastha. Now it's high time to look back at ancient knowledge for care and maintenance of healthy phases as catabolism rate is increased in each phase of life and early ageing is observed due to the worst lifestyle.Metabolism in each phases affected recently in each phase of life and solution for each phase to prevent Early Vridhavastha is mentioned in the current article.

Keywords:- Vayavastha, Metabolism, Catabolism, Shiryat Iti Shariram, Population Ageing

Introduction:

विघ्नभूता यदा रोगाः प्रादुर्भूताः शरीरिणाम् |

तपोवासाध्ययनः ब्रह्मचर्य व्रतायुषम् ||

तदा भूतेषु अनुक्रोशं पुरस्कृत्य महर्षयः |

समेताः पुण्यकर्माणः पार्श्वे हिमवतः शुभे || च.सू. १/६-७

The great commentator of Charak Samhita “Acharaya Chakarapani “while commenting on above shloka had explained definition of SHARIR as शीर्यत् इति शरीरम् | means the place where continued degenerative procedure occurs. Also, Shloka mentioned that this ongoing procedure get accelerated by the “Rogas “means various diseases. Precaution should be taken for this degenerative process should slow down and prevent Rogas so as to achieve the motto of life i.e., Moksha.

In the context of “Vividha Rugna Pariksha " in Charaka vimana sthana 8th adhyaya , patients should also be examined by VAYA i.e. age. At the same time signs of aging are also mentioned there.

This supports Ancient acharya had foresight of geriatric diseases and let’s have a glance on this great knowledge.

Literary Review:

Population ageing is a shift in the distribution of a country's population towards older ages and is usually reflected in an increase in the population's mean and median ages, a decline in the proportion of the population composed of children, and a rise in the proportion of the population composed of elderly. Population ageing is widespread across the world and is most advanced in the most highly developed countries(a)

Societal aging can affect economic growth, patterns of work and retirement, the way that family’s function, the ability of governments and communities to provide adequate resources for older adults, and the prevalence of chronic disease and disability. (b)

Exactly the same signs were explained by Charakacharya in vimana sthana. Limitation of age for madhyamavastha restricted to 60 and after that JARAVASTHA got started upto 100 years of age. But if signs

हीयमान धातू इंद्रिय बल वीर्य पौरुष पराक्रम ग्रहण धारण स्मरण वचन विज्ञानं भ्रश्यमान धातुगुणं वायुधातुप्रायं क्रमेण जीर्णमुच्यते आवर्षशतम्| च.वि. ८ १२२

Observed can also be considered as JARAVASTHA

Still one question remains unanswered: if SHARIRA is continuing to degenerative how growth occurs from zygote upto death. Answer is though degeneration mens catabolism occurs and anabolism also present. At each different stage of life rates of metabolism changes hence we can observe growth from zygote upto middle age as Anabolism rate is higher in that phase of life. During middle age both anabolism and catabolism work simultaneously and hence health remains as it is.

In old age catabolism rate increases and hence we can observe more cell death as compared to all other phases of life.

It doesn't means that JARAVASSTHA present only after 60s degenerative diseases in childhood like hypothyroidism, vitamin D deficiency, xerophthalmia, scurvy, kwashiorkor, marasmus all are explaining

शीर्यत् इति शरीरम्| in childhood.

Cataract, osteoporosis, baldness, grey hair, etc. occurring before time are some degenerative diseases observed in middle age

We all are aware about old age diseases from deafness upto parkinsonism.

Discussion:

Sharir is going to degenerate progressively. But as per health of humans this process can be slowed down or this process gets accelerated.

Conclusion:

Death of a person is eternal but being healthy throughout life is right for everyone. For the same Ayurveda had explained the healthy lifestyle measures initially as dinacharya and ritucharya. Also, Rasayana and vajikarana adhyaya helps for healthy longevity of life and then ayurveda

explained various remedies for various diseases. Hence prevention of this Jravastha can only be prevented by Healthy lifestyle explained by Ayurveda

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ANATOMIC CHANGES AFFECTING THE AIRWAY OF THE ELDERLY POPULATION

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Abstract:- There are many anatomical, physiopathological, and cognitive changes that occur in the elderly that affect different components of respiratory system. Anatomical changes occur in different areas of the respiratory system from the oral cavity to the larynx. Common changes to the airway include tooth decay, oropharyngeal tumours, and significant decreases in neck range of motion. Also, some of these changes, including but not limited to, atrophy of the muscles around the lips and an edentulous mouth. Common pulmonary issues in the elderly (e.g. obstructive sleepapnea and COPD) increase the risk of an oxygen desaturation event, Overall, degradation of the airway along with other physiopathologic and cognitive changes makes the elderly population more prone to complications related to respiratory system.

INTRODUCTION

Ageing is the progressive, universal decline. First in functional reserve and then in function that occurs in organisms overtime. Ageing is heterogeneous. It varies widely in different individuals and in different organs within a particular individual. Ageing is not a disease. However, the risk of developing disease is increased, often dramatically, as a function of age. The

biochemical composition of tissues change with age. Physiologic Capacity decreases. The ability to maintain homeostasis in adapting to stressors declines. After maturation, mortality rate increases exponentially with age. In this paper we will try to discuss anatomical changes to respiratory system in elderly population.

Anatomic Changes:-

Nasal cavity

The nose is an essential organ of respiration that needs to function from the moment of birth. It is a vehicle through which over 12,000 L of air pass per day. Its purpose is not only to pass air, but also to warm, humidify, and clean the particles and bacteria in the air before it reaches the lungs. It also provides a positive end-expiratory pressure to keep the lungs expanded and serves the extremely important function of olfaction. Nasal function is affected by the nasal structures and by aging. Drooping of the nose and ptosis of the nasal tip may be noticed with aging. These changes may be due changes in the nasal cartilages, loss of midfacial support and loss of tensile strength in aging skin . With aging, there are several changes to the skin including epidermis, the dermis, the skin appendages, and the subcutaneous tissue. The nose tends to show more changes with age because it is the most exposed part of the body to sun and air.The changes in skin with age include decrease in thickness, reduction in melanocytes, and reduction strength of the skin over and around the nose. The skin tension lines are enhanced with age, which may affect the external nasal valve. The surface area of the nasal septal cartilage also decreases with age especially in the area below the nasal bones and along the dorsum of nose. The nose serves many functions, including respiration, air conditioning of the inhaled air, and olfaction. Aging does not seem to affect the resistance to nasal airflow in the normal geriatric population. However, the changes in the cartilages, skin, and muscles of the nose and the regression of the teeth and alveolus may affect the flow of air into the older nose. Aging may lead to alar collapse and dynamic closure of the external nasal valve and may also change the angle of the internal nasal valve. This may considerably disrupt the normal nasal air flow.

ORAL CAVITY

The lips are often overlooked in the elderly; however, they are prone to being lacerated due to excessive dryness and fragility. The cutis in the lip thins with age and collagen fibers also begin to separate.This is consistent with the general tendency of the epidermis and dermis to thin with aging. Additionallyatrophy of the orbicularis oris muscle occurs with advancing age which might lead to a mild facial droop near the corners of the mouth

Elderly people experience many problems with their teeth that are aging-related including periodontal disease and tooth decay. Frequently, less saliva is produced leading to a dry mouth. Since saliva acts as a source of protective minerals for teeth and inhibits the growth of bacteria, this reduction contributes to dental decay. Approximately two-thirds of elderly population have had tooth decay, and almost a quarter have untreated decay.The elderly also tend to lose their teeth as they age and their gums tend to shrink exposing the roots where cavities are more likely to form. If not treated, the cavities may cause infection leading to the loss of teeth. Tongue pressure (pressure exerted by the the tongue on the hard palate) is significantly decreased with age indicative of muscle fatigue, specifically of the infrahyoid and suprahyoid muscles, which may affect swallowing.

PHARYNGEAL/ LARYNGEAL

Oropharyngeal cancer is common in elderly patients, especially at the base of the tongue and other tonsillar regions These tumours may also be present as masses on the neck, which may decrease the ROM of the neck and the distance between the thyroid notch to the tip of the jaw with the head extended. Obstructive sleep apnea (OSA) occurs in the elderly due to changes in the pharynx. There is also an increase of parapharyngeal fat accumulation due to aging independent of BMI, which leads to OSA.

In addition, the elderly experience a decrease in the genioglossus negative-pressure reflex, and since the genioglossus muscle is an upper

airway dilator which protects pharyngeal patency, any impairment in this muscle or reflex increases the chances of airway obstruction and pharyngeal collapse. Due to aging, the number of collagen fibers and elastin fibers in the hyoepiglottic ligament is decreased, which makes the epiglottis floppier and harder to move anteriorly. In addition, abnormalities related to the epiglottis are more common in the elderly than other age groups. Some of these abnormalities include delayed functioning, limited movement, or lack of movement downward. Tumours in the elderly may also lead to thickening of the epiglottis, rendering it almost immobile. These all prevent the epiglottis from effectively protecting the airway.

NECK

Changes that occur in the neck due to aging include rheumatoid arthritis, myelopathy, and development of thyroid masses, which affect rotation and ROM Rheumatoid arthritis occurs mostly in the second and third cervical vertebrae, causing ligament destruction, inflammation, swelling of the synovial membrane, and atlantoaxial subluxation, making rotation difficult. Arthritis is often associated with osteophytes, which can result in neurologic symptoms if they interfere with spinal nerves. As people age, the intervertebral discs begin to lose their supporting capabilities and shrink; thus shortening the distance between the vertebrae. The shortening of the discs puts stress on the cartilage of the vertebrae, causing a decrease in size of the spinal canal. This narrowing puts pressure on the spinal cord resulting in cervical spondylotic myelopathy. This results in stiffness of the neck, and may manifest as pain in the neck, arms, and shoulders.

The incidence of goitres increases in the elderly, and if large enough, may cause thyroid failure Elderly patients with hypothyroidism are more likely to suffer from myxedema coma. Triggers for this type of coma may be certain medications, hospitalization, stress, and other illnesses. Hyperthyroid issues such as Graves' disease and toxic multinodular goiter are also common in the elderly and may cause osteoporosis,

nausea and vomiting, supraventricular arrhythmias and other heart conditions, depression, and mania.

DISCUSSION AND CONCLUSION

The structure and function surrounding the airway change by the age, which may ultimately result in having anatomic features of difficult airways in the elderly. Hence, pen downed focusing on the age-related anatomic changes especially about changes in nasal cavity, oral cavity, Pharyngeal/laryngeal and neck .age-related changes in anatomy are compatible with the predictors of a difficult airway. We hope that these age-related anatomic approaches will prospectively allow a detailed understanding of the hallmarks resulting in geriatric-focused difficult airways in the future studies.

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SENILE CHANGES IN BRAIN AND AYURVEDA

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Abstract:- Aging is a natural phenomenon which cannot be stopped but can be delayed by taking good precautionary measures. Also, premature aging is a concern in new era which should be efficiently tackled in time. In Ayurveda a whole branch is designated as the rasayana chikitsa which should be commenced on apt time. The early changes of aging should be analysed by the structural changes in the body. The shareeratmik analyses helps in the early commencement of treatement. The main part which effect at the earliest is the brain itself. The changes in brain are mainly in brain volume, weight, shrinking of grey matter, white matter lesions and so on. The structural changes in the brain can be arrested and if reversible can be tackled trough the rasayana therapies.

Introduction

Jara chikitsa or geriatric medicine is one among the eight branches of Ayurveda which comprises of specific medications that is rasayana oushadhis along with ahara and viharas1. It is a branch which explains how to lead a life style of self-discipline along with social etiquette which ultimately maintains the optimum state of body tissues and mental health. Ageing is a swabhava or natural process of degeneration of the body tissues. The aim of rasayana therapy is to prevent the premature aging and making the natural process of ageing in a healthy way by improving the quality of life. The main challenges faced by the elderly people now a days are more related to neurological such as dementia, alzheimer's disease etc. which is related to brain. The Ayurveda classics mentions many rasayana therapies which is specific for brain well-being as medhya rasayana to be started in a specific age along with good

conducts to be followed which makes the aging process a healthy and with less trauma physically as well as mentally to the people.

Materials and methods

Classical literature of Ayurveda as well as modern medical science on the subject of anatomy, rasayana and geriatrics from library as well as from internet were collected, analyzed and presented.

Review of literature

The aim of the rasayana therapy has been explained in ashtanga hridaya sutrasthan as the means of achieving the finest quality of body tissues where it increases life span, improves the intelligence, cures diseases, stabilizes youthfulness, improves lustre, complexion, voice and makes body and senses strong and healthy.[2]

Deerghamaayu: smritimedhaam aarogyam tarunam vaya: /

Prabha varna swaroudaaryam dehendriya balodayam //

Vaak siddhim vrushataam kaantim avapnoti rasaayanat /

(Ash. Hr. ut. 39/1,2)

Acharya sharngadhara has narrated decade wise decline conditions such as in the first decade, balyavastha or the infancy will be lost, in the second decade, vriddhi or growth will be diminished, in the third decade chhavi or complexion, in the fourth decade medha or intelligence will be lost, in the fifth decade twak or skin health will be diminished, in the sixth decade, Drishti or vision will be diminished and soon.[3]

Shiras is considered as one among the tri-marmas4. Shiras has been mentioned as the tree which is having root upside and the branches spreading downwards, it is the seat of life and the superior anga or body part5. Prior importance is given to brain because it is the base of the nervous system which controls each and every function in the body.

The main challenges of the geriatric syndrome comprise of bladder control problems, sleep problems, delirium, falls, osteoporosis and weight loss. All these can be collectively assumed as catabolic functions of the body. The

continuous process of transformation taking place in the body finally proceeds towards disintegration6. The term sheeryathe indicates this process in specific.

Modern aspects:

Ageing is a universal feature of biological organisms, defined by a gradual decline over time in cell and tissue function that often, but not always, decreases the longevity of an individual.[7]

Cellular senescence is defined by an irreversible arrest in cell proliferation when cells experience DNA damage at telomeres and a decrease in mitogenic signalling. In contrast to reversibly arrested quiescent cells in G0 of the cell cycle, senescent growth arrest is irreversible; cells in this state cannot be stimulated to proliferate by known stimuli and cannot be prompted to re-enter the cell cycle by physiological mechanisms.[8]

The volume of the brain and/or its weight declines with age at a rate of around 5% per decade after age 409 with the actual rate of decline possibly increasing with age particularly over age 70[10]

The shrinking of the grey matter is frequently reported to stem from neuronal cell death[11]

White matter may decline with age, the myelin sheath deteriorating after around the age of 40 even in normal ageing and it has been suggested that the late myelinating regions of the frontal lobes are most affected by white matter lesions (WML)[12]

The neurotransmitters most often discussed with regard to ageing are dopamine and serotonin. Dopamine levels decline by around 10% per decade from early adulthood and have been associated with declines in cognitive and motor performance[13]

Serotonin and brain derived neurotrophic factor levels also fall with increasing age and may be implicated in the regulation of synaptic plasticity and neurogenesis in the adult brain[14]

Other factors that have been implicated in the ageing brain include calcium dysregulation,15 mitochondrial dysfunction, and the production of reactive oxygen species.16

Light and heavy smokers all displayed smaller GM and WM volume than non-smokers and more obviously in heavy smokers17

Discussion & Conclusion

The main organ which gives age related early changes in the body is brain. Many studies having been carried out regarding the changes in brain during aging. Ayurveda propounds that the medha, the core of cognitive function of brain starts depleting by fourth decade of human life and after eighth decade the loss of buddhi or decision-making intellect becomes inevitable leading to senile dementia as a normal sequence of events in ageing process. While going through the data that the volume and weight of the brain reduces by 5% after the age of 40 years has been taken in to account, the same has been mentioned by acharya sharngadhara as after 40 years the medha or intelligence starts declining. From this we should consider that the apt time for starting the rasayana medication should be in the madhyma vayas before 40 years of age.

Aging is a complex phenomenon, a sum total of changes that occur in a living organism with the passage of time and lead to decreasing ability to survive stress, increasing functional impairment and growing probability of death

The main anatomical structural changes in the brain as per the studies are

- Reduction in brain volume and weight with age ata a rate of 5% per decade after age 40
- Shrinking of grey matter
- Leukoariosis or white matter lesion, the late myelinated regions of the frontal lobes are most affected
- Pre frontal cortex is most affected and the occipital cortex is least affected
- The neurotransmitters related to aging are dopamine and serotonin. The decrease in dopamine level leads to decline synapses that results in

decreased binding to receptors. The serotonin also decreases with increase in age which leads to regulation of synaptic plasticity and neurogenesis in the adult brain.

The changes in brain vasculature, white matter lesion and intra or extra cellular changes are likely to begin in midlife. According to Ayurveda the ageing is due to swabhava or nature of living being which is considered to be a time bound entity and it biologically ceases to exist through senescence and death. The rasayana medicine specific to brain tissue are called medhya rasayana. They retard brain aging and help in regeneration of neural tissues besides producing antistress, adaptogenic and memory enhancing effect.

The brain aging in geriatric health care is a matter of great concern as it is an inevitable phenomenon of the evolutionary process of body mind system with degenerative changes like physiological disturbances of neurotransmitter secretions, blunting of dendrites and synapses and formation of beta amyloid plaques etc. the neuro-nutrients through the medhya rasayanas and through the achara rasayanas that is the code and conduct to be followed can make the aging process in a healthy manner.

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SHIRYATE ITI SHARIRAM

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Abstract:– In our day-to-day life which performing activities there is more or less depletion of 'Dhatu' takes place which results in "Dhatukshaya" depending on the physical day to day activities an individual. It is said that "Shiryate iti shariram". According to modern gerontology aims to explain why almost all living things weaken, destroy and die with age. According to Ayurveda, the physiology regarding 'sharir' [which means continuously decaying ("shiryati") as the nomenclature suggests] has been explained extensively in Ayurveda. Vriddhavastha is that stage of life when decay in the body, dhatu (various anatomical tissue), perception power of the indriya (sensory and motor organs), potency, strength and speech, various mental and cognitive functions. During this period there is predominance of Vata Dosha (one of three biological factors). The major physical changes during this period are graying hairs, skin, wrinkling, baldness and diminishing ability to do physical work.

Keywords:– Sharir, Decay, Aging, Dhatu, Geriatrics.

INTRODUCTION-

Ageing refers to the inevitable, irreversible decline in organ function that occurs over time even in absence of injury, illness, environmental risks, or poor lifestyle choices (unhealthy diet, lack of exercise, substance abuse)1. According to Ayurveda any material which regularly degenerates or destroy is termed as Sharir. "Shiryate iti Shariram" in other words sharir can be

termed as an object which all the time destroys because of constant movements3. In our day-to-day life while performing activities there is more or less depletion of “Dhatu” takes place which results in “Dhatukshaya” depending on the physical day to day activities an individual. It is said that “SHIRYATE ITI SHARIR”2. According to modern science regeneration and degeneration go simultaneously right from the neonatal life to young age. As the age advances body becomes fragile, digestion and metabolism get weakened and more catabolic reactions begin.

AGEING IS NATURAL PHENOMENA ACCORDING TO AYURVEDA –

Hence in Ayurveda ageing is supposed to be continuous and natural process. The decay or diminution strats in the body from its birth4. At every 10 years this depletion can be assessed as described in the Sharangdhar Samhita5. Vriddhavastha is the last part of the life span and is characterized by degenerative changes. It is the stage of life when the ageing has been established and various functioning of the body already depletion. According to dalhan the swabhavik disease occur due to the power of nature (prakriti). Daurvalyata (weakness) is caused by Swabhava, Dosha and Jara (geriatric).

AGEING ACCORDING BODY PARTS –

1. BRAIN – Ageing starts after age 20

After age 20 neurons and nerve cells are start degenerate. In early age of life neurons in quantity about 100 billion. At the age of 20 neurons starts decline 10,000 per day. It’s effect on memory and emotional behavior.

2. GUT – Ageing starts after age 50

After age 50 GIT issues starts like constipation, IBS, piles etc. intestine have some digestive beneficial bacteria they help in digestion. But after age 50 these bacteria start decline and results are poor digestion occur.

3. BREAST – Ageing starts after age 35

After this age women suffers more health issues about in reproductive system. Breasts have also loosed their fat, tightening, reduce size and fullness. Most of women suffers by breast cancer.

4. BLADDER – Ageing starts after age 65

After this age bladder loss their control mechanism and women suffers more urination problem after menopause.

5. LUNGS – Ageing starts after age 20

After this age the lungs capacity becomes decrease and however at age 40 some people face breathlessness4.

AYURVEDIC ASPECT OF GERONTOLOGY–

According to Ayurveda the ageing is progressive and natural disease. According to modern the geriatric the Latin word "GERUS" mean of this word 'To grow old'. According jara or ageing is natural process acharya chakrapani also describe it as Svabhavo Nihspritikriya . A national campaign on Ayurveda and Siddha for Geriatric Health Care was started in 2012 which denotes "May we aged happily for one hundred years or more our faculties of hearing, vision and speech fully intact and without dependance on anybody else4. (Yajurveda: 36/24)

EFFECTS OF DIET ON AGEING-

According to Ayurveda, food is responsible for the growth and development of an individual if it is consumed in propper way, in propper quantity and in propper manner which is also called as Hitkar Aahar and if it is not consumed by the ways it should be, it is called as Ahitkar Aahar, it will be lead various degenerative functions in the body resulting in vyadhia was tha 6,7. The diet (aahar rasa) required for the effects which is essential element for the process of generating or embryogenesis of the entire body, which includes the development of all the structures (Dosha, Dhatu, Mala).

KSHEEN MANSIK AND SHARIRIK AWASTHA IN JARAAWASTHA–

In ancient time people live long life span as compare to now today's era. Now many more life style disorders occur. All these above mentally and physically issues occur in now days and many more people suffer from these at early age because of ageing. Today's life span is also become short due to

miss and rubbish diet habits. Just revers to all signs Maharh like Acharya Chyavan, Bharadwaj and Vishishta lived very healthy life and attained the age of more than hundred years of life span. They got success by reviving their youthful Medha (intellect), Smiriti (memory), Dhriti (tolerance), Nirmayata (freedom from disease), Dhirgayu (longevity), and Jathragni (digestive fire) 8.

TYPES OF AGEING –

The term of 'Ageing' is somewhat ambiguous. Stuart-Hamilton (1994) notes how distinction may be made between various kinds of ageing.

1. UNIVERSAL AGEING – Age changes that all people share.

2. PROBABILISTIC AGEING – Age changes that may happen to some, but not all people as they grow older, such as the onset of type II diabetes.

3. CHRONOLOGICAL AGEING – Referring to how old person is.

4. SOCIAL AGEING – Society's expectations that how people should act as they grow older.

5. BIOLOGICAL AGEING – An organism physical state as they grow older.

6. PROXIMAL AGEING – Age-based effects that come about because of factors in the recent past.

7. DISTAL AGEING – Age-based differences that can be traced back to a cause early in a person's life, such as childhood poliomyelitis.

8. POPULATION AGEING – It is increase in the number and proportion of older people in society4.

In ageing, the chronological age does not correlate perfectly with functional age, i.e. two people may be of the same age, but differ in the mental and physical capacities. According with the age everything about mental and physical capacities are decreases. Angela Epstein (French Doctor) tells the age when different parts of the body start to lose their battle with the age. Ageing refers to multidimensional process of physical, social, and physiological changes. These changes are always degenerative in nature.

CONCLUSION –

The stress is major factor responsible for various elements of old age. The process of ageing and process of disease are not only somatic changes but also due to phychoneuro-humoral changes. Ageing is a process of becoming old and decaying day by day, which can be quoted by "Shiriyate Iti Shariram", as ages advances, several changes take place in the body, externally as well internally in the condition of Dosha, Dhatu, Mala, Agni etc.

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SHIRYATE ITI SHARIRAM AND ITS CONTROLLING MEASURES

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Abstract:- In Ayurveda, Charak Acharya said that Sharira is defined as which is made from combination of panchmahabhuta and Atma (Consciousness)1. Since human body is the part of this universe, whatever is available in the universe, those are also present in the human body .So, the universe is made from panchmahabhuta like Prithvi (Earth), Aap (Water), Tej (Agni), Vayu (Air) and Aakash (Space). The term "Shiryate Iti Shariram" that which degenerates is known as body2. The body element degenerates and get lost again in pachmahabhutas. All the Saptadhatus are panchbhautika and when there is vriddhi or kshaya in these dhatu, there is necessity to treat these dhatu by Panchbhautika chikitsa. According to phases of life like childhood, adulthood and old age, Dhatu kshaya occurs gradually so there is need to restore Dhatu in its proper state by using panchbhautika chikitsa.

Keywords:- Sharira, panchbhautika chikitsa, panchmahabhuta.

INTRODUCTION-

Ayurveda is the ancient science developed for human welfare. Ayurveda has evolved the origin of the body by "Yavat Purushe Tavat loke"(principle found in universe is same as in human body)3.

The word panchmahabhuta referred to five elements of the body Prithvi, Aap, Tej, Vayu, Aakash. These elements are acting as primary elements of the body. These pachmahabhutas are formed from avyakta tatva and ahankar in srushti utapti siddhanta. In this process, panchtanmatras are formed and from these pachmahabhutas are formed.

These formed panchmahabhuta develop following gunas as khara, drava, ushna, apratighat. By these gunas, our body maintain the regular body activities4.

The term geriatrics is defined as a branch of medicine that deals with the problems and diseases of old age and the medical care and treatment of aging people.

AIM AND OBJECTIVES-

To study the term Shiryate Iti Shariram And It`s Controlling Measures.

To study the panchbhautika chikitsa by using panchbhautika siddhanta.

MATERIALS AND METHODS-

The main Ayurvedic texts used in this study are Samhita grantha. The information about panchbhautika chikitsa is taken from the classical texts.

CONCEPT OF SHARIR-

According to Charak Acharya, Sharira is made from the combination of pachmahabhutas and Atma. It is also called as Shadadhtvatmak Purusha.

According To Sushruta Acharya, Panchbhutatmak Deha (sharir) is formed by eating Panchbhautika Aahar that means body parts are developed healthy by means of Satvika Aahar.

CONCEPT OF PANCHMAHABHUTA-

In Charak Sutrasthana, Charak Acharya told that All the things in the universe is made from panchmahabhuta. Since the nature is based on Panchmahabhuta, the body should also be based on them.

Prithvi (Earth) - It contains all solid materials like nails, bones, teeth, flesh, hair, etc.

Aap (Water) – It contains fluids, Kapha, Pitta, urine, saliva, etc.

Tej (Agni) – It contains Pitta, heat, eyesight , etc.

Vayu (Air) – It contains breathing, blinking and opening of eyelids, speed, inspiration, etc.

Aakasha (Space) – It contains all the holes, hallow organs, etc.

Panchbhautika chikitsa – This chikitsa is invented by Vaidya Datar Shastri

DISCUSSION -

Aging is the process physical, psychological and social change in multi-dimentional aspects. Ayurveda has the potential for disease prevention by health promotion and noncommunicable disease prevention.

All the diseases occurs in old age due to impairment of panchmahabhuta, their vriddhi or kshaya. Hence to improve the geriatric life ,panchbhautik chikitsa is used.Panchbhautika chikitsa is a principle of analysis and treatment. It include dosha and panchmahabhuta relation for treatment.

Vata dosha is the most powerful of the doshas. It controls the basic bodily functions as well as the mind. It influences all types of movements in the body, from the movement of Prana and nerve impulses and body fluids. This vata dosha is the combination of Akash and Vayu Mahabhuta.

Pitta dosha is responsible for metabolism, digestion and harmones linked to appetite. Pitta is a combination of water and fire element.

Kapha dosha is responsible for strength and stability, muscle growth, weight and the immune system. Kapha is the combination of water and the earth element5.

The equilibrium in the body denotes the health their imbalance or disturbance denotes disease. As the age increases body elements gets degenerated and this can be treated by panchbhautika chikitsa.

Sr.No.	Panchmahabhuta	Vyadhi	Chikitsa
1.	Prithvi	Krushta	Nuts ,Wheat, etc.
2.	Aap	Aavdhatukshay	Lajajal, Siddhajal , etc.
3.	Tej	Agnimandhya	Pippali, Ardhraka , Lasun , etc.
4.	Vayu	Adhman , Avarodha	Snehan, Swedan.
5.	Aakash	Decrease in space and accumulation of water and any fluid in that space.	Excretion of water from that space.

The above table denotes that when there is decrease in any element of body it should be treated by giving that element through aahar6.

CONCLUSION-

The word Panchbhautik chikitsa encomposes various aspects of health including diet, exercise, profession, environment, drugs, Preparation of medicines, diagnosis and treatment. It achieved vey good results with treatment. It includes the basic principles and its use in treating diseases in old age.

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ANATOMICAL CHANGES IN GERIATRICS

SKIN CHANGES IN GERIATRICS

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Abstract:- Skin is the largest organ completely covering the body continuous with membranes lining body orifices. Aging changes in the skin are a group of common conditions and developments that occur as people grow older. Skin changes are among the most visible signs of aging. Evidence of increasing age includes wrinkles and sagging skin. Whitening or greying of the hair is another obvious sign of aging. Although skin has many layers, it can generally be divided into three main parts:The outer part (epidermis). The middle part (dermis). The inner layer under the dermis (the subcutaneous layer).

INTRODUCTION

Your skin does many things. It:

- Contains nerve receptors that allow you to feel touch, pain, and pressure
- Helps control fluid and electrolyte balance
- Helps control your body temperature
- Protects you from the environment

Although skin has many layers, it can generally be divided into three main parts:

- The outer part (epidermis) contains skin cells, pigment, and proteins.
- The middle part (dermis) contains skin cells, blood vessels, nerves, hair follicles, and oil glands. The dermis provides nutrients to the epidermis.
- The inner layer under the dermis (the subcutaneous layer) contains sweat glands, some hair follicles, blood vessels, and fat.

Average thickness: 1-2mm, 0.5mm on eyelids & 6mm on palms & soles. pH-4 to 5.6. Renewal of skin takes place in 28-50 days by shedding of outer layer.

- Epidermis:

  Stratified squamous

  epithelium; outer layer is "keratinized" or "cornified"

- Dermis:

  Dense irregular connective tissue

- Hypodermis:

  Adipose connective tissue

Epidermis:

Avascular layer that depends on blood vessels in underlying dermis for its nutrition. Cells formed by mitosis in deepest or basal, layer, then get pushed into more superficial layers or "stata".

Stratum Corneum: 15 -20 layers of dead cells mechanical protection and water proof. Thickening of corneal layer – Ichthyoses.

Stratum Lucidum: flat epithelial cells, homogenous translucent appearance.

Stratum Granulosum: 2-5 layers of flattened rhomboid cells.

Stratum Spinosum: spinous or prickle-cell layer.

Stratum Basale: Usually one cell thick, 2-3 cell thick in glabrous skin and hyperproliferative epidermis.

Keratinocytes Primary cell type in epidermis which produce large amounts of protein keratin.

Melanocytes produce pigment melanin & transfer it to keratinocytes.

Langerhans cells (really macrophages) clean up debris.

Merkel cells detect touch and pressure; transfer this information to sensory receptors in the dermis.

Dermis

Dense irregular connective tissue. Separated from epidermis by basement membrane.

Highly vascular, highly innervated

Contains many types of sensory touch, pressure, vibration, pain, temperature, etc.

Cells

Fibroblasts, macrophages, mast cells, lymphocytes

Fibers

Collagen -strong, flexible

Elastic – stretchable

Tears in collagen fibers producting striae

Function of skin

Protection against physical damages and abrasion, infections, UV and other radiations, oozing body fluid and solutes in.

Sensory Perception (touch, mperature, pressure, pain, etc.)

Vitamin D Synthesis

Temperature regulation

Excretion (lactic acid, sodium chloride, urea)

Blood reservoir

Content

Skin changes are related to environmental factors, genetic makeup, nutrition, and other factors. The greatest single factor, though, is sun exposure. You can see this by comparing areas of your body that have regular sun exposure with areas that are protected from sunlight.

Natural pigments seem to provide some protection against sun-induced skin damage. Blue-eyed, fair-skinned people show more aging skin changes than people with darker, more heavily pigmented skin.

AGING CHANGES

With aging, the outer skin layer (epidermis) thins, even though the number of cell layers remains unchanged.

The number of pigment-containing cells (melanocytes) decreases. The remaining melanocytes increase in size. Aging skin looks thinner, paler, and clear (translucent). Pigmented spots including age spots or "liver spots" may appear in sun-exposed areas. The medical term for these areas is lentigos.

Changes in the connective tissue reduce the skin's strength and elasticity. This is known as elastosis. It is more noticeable in sun-exposed areas (solar elastosis). Elastosis produces the leathery, weather-beaten appearance common to farmers, sailors, and others who spend a large amount of time outdoors.

The blood vessels of the dermis become more fragile. This leads to bruising, bleeding under the skin (often called senile purpura), cherry angiomas, and similar conditions.

Sebaceous glands produce less oil as you age. Men experience a minimal decrease, most often after the age of 80. Women gradually produce less oil beginning after menopause. This can make it harder to keep the skin moist, resulting in dryness and itchiness.

The subcutaneous fat layer thins so it has less insulation and padding. This increases your risk of skin injury and reduces your ability to maintain body temperature. Because you have less natural insulation, you can get hypothermia in cold weather.

Some medicines are absorbed by the fat layer. Shrinkage of this layer may change the way that these medicines work.

The sweat glands produce less sweat. This makes it harder to keep cool. Your risk for overheating or developing heat stroke increases.

Growths such as skin tags, warts, brown rough patches (seborrheic keratoses), and other blemishes are more common in older people. Also common are pinkish rough patches (actinic keratosis) which have a small chance of becoming a skin cancer.

EFFECT OF CHANGES

As you age, you are at increased risk for skin injury. Your skin is thinner, more fragile, and you lose some of the protective fat layer. You also may be less able to sense touch, pressure, vibration, heat, and cold.

Rubbing or pulling on the skin can cause skin tears. Fragile blood vessels can break easily. Bruises, flat collections of blood (purpura), and raised collections of blood (hematomas) may form after even a minor injury.

Pressure ulcers can be caused by skin changes, loss of the fat layer, reduced activity, poor nutrition, and illnesses. Sores are most easily seen on the outside surface of the forearms, but they can occur anywhere on the body.

Aging skin repairs itself more slowly than younger skin. Wound healing may be up to 4 times slower. This contributes to pressure ulcers and infections. Diabetes, blood vessel changes, lowered immunity, and other factors also affect healing.

COMMON PROBLEMS

Skin disorders are so common among older people that it is often hard to tell normal changes from those related to a disorder. More than 90% of all older people have some type of skin disorder.

Skin disorders can be caused by many conditions, including:

- Blood vessel diseases, such as arteriosclerosis
- Diabetes
- Heart disease
- Liver disease
- Nutritional deficiencies
- Obesity
- Reactions to medicines
- Stress

Other causes of skin changes:

- Allergies to plants and other substances
- Climate
- Clothing
- Exposures to industrial and household chemicals
- Indoor heating

Sunlight can cause:

- Loss of elasticity (elastosis)
- Noncancerous skin growths (keratoacanthomas)
- Pigment changes such as liver spots
- Thickening of the skin

Sun exposure has also been directly linked to skin cancers, including basal cell cancer, squamous cell carcinoma, and melanoma.

PREVENTION

Because most skin changes are related to sun exposure, prevention is a lifelong process.

- Prevent sunburn if at all possible.
- Use a good quality sunscreen when outdoors, even in the winter.
- Wear protective clothing and a hat when needed.

Good nutrition and adequate fluids are also helpful. Dehydration increases the risk of skin injury. Sometimes minor nutritional deficiencies can cause rashes, skin lesions, and other skin changes, even if you have no other symptoms.

Keep skin moist with lotions and other moisturizers. Do not use soaps that are heavily perfumed. Bath oils are not recommended because they can cause you to slip and fall. Moist skin is more comfortable and will heal more quickly.

Conclusions

As we age, there are many skin changes that can and do happen, some of which are preventable and some of which are not. It is important to understand which skin changes are normal as we age and which skin changes are cause for concern or further intervention. Additionally, it is important to understand prevention, treatment, and education as they relate to our aging population and their often fragile skin.

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A LITERARY STUDY ON SROTOVIKRITI IN GERIATRICS – THE SCIENCE OF LIFE

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Abstract:- Srotas comes from the root word 'susravano,' which meaning to exude, ooze, filter, and permeate. Srotas is responsible for a variety of processes that assist to nourish the entire body. Diseases arise when there is a structural or functional disruption at the level of the Srotas. Srotovaigunya is a condition in which the Srotas are vulnerable to pathological alterations or favourable movement, resulting in illness. There are four types of Srotovikriti Lakshana: Atipravrutti, Sanga, Siragranthi, and Vimarga gamana. The physiological vitiation is represented by Srotovikriti lakshanas. Disease might show up as a single symptom or a group of symptoms over time. Any severe damage to essential bodily structures that results in an anatomical malformation is referred to as SrotoViddha. As a result, a distinction is drawn between Srotovaigunya, Srotovikriti, and SrotoViddha lakshanas. It is critical to have a thorough understanding of the aforementioned in order to develop appropriate treatments.

Geriatrics is becoming a prominent medical specialty across the world. Except for the medical therapy of old age illnesses, the conventional medical system has nothing to offer in the core field of geriatric care.

Ayurveda, India's ancient holistic health system, provides a wide range of preventative techniques for slowing down the ageing process. It includes a specialised section called Rasayana that focuses on geriatric issues. As a result, all that is required is to slow down the process of ageing to a certain amount while still encouraging healthy ageing.

Keywords:- Geriatrics, Srotovikriti, Srotas, etc.

INTRODUCTION

Srotas in the manifestation of disease is well According to Ayurveda1, the significance of maintaining normal physiological functioning, which is the foundation for good health, is emphasised in nearly all Ayurvedic literature. To address a patient holistically, an Ayurvedic physician must have a thorough understanding of Srotas. As a result of the malfunctioning Srotas, illness manifests in the body.1 As a result, any Srotas fault must be addressed as soon as possible in order to restore normal health.

It is a requirement for maintaining good health since the body cannot execute its regular activities without healthy Srotas. Samshodhana therapy is advised for eliminating existing Malas from the body and therefore keeping Srotas in good condition. As long as these circulatory channels maintain their regular duties, the body will be disease-free. In the current environment, we must be able to distinguish between these ideas in order to prevent illness recurrence, choose suitable treatments, understand prognosis, and increase immunity. Srotovaigunya, Dushti, and Viddha have all been discussed in detail below.2

It indicates that the dhatus (tissue components or constituents) undergoing metamorphosis are transported to their final destination via circulatory pathways. The word "Parinamamapadyamananam" denotes that the channels transport tissue components that are undergoing metamorphosis from one condition to another, such as rasa (plasma) to Rakta (blood), and soon.3

The term "ayanarthena" refers to the fact that the channels of circulation do not transport the sthira (stable) dhatus, but only those of the mobile dhatus that are intended to be converted into another dhatu located elsewhere.4 The number of Srotamsi in the body-mind-spirit system is equal to the number of life elements operating in the life.

Ageing is a multifaceted and unavoidable process that begins before birth and continues throughout one's lifetime. It's mostly a physiological phenomenon that occurs as a result of evolutionary changes in the mind-body connection.5

The twenty-first century is seeing a steady reduction in fertility, and as life expectancy rises, society will have to deal with longevity concerns.6 The world's senior population is growing, and by 2045, individuals aged 65 and more will account for one-fifth of the worldwide population. In India, 4.1 percent of the population is 65 years old or older.7

With the growing senior population throughout the world, especially in India, it is becoming more important to create better Geriatric health care techniques. Geriatric care must address two issues: first, fundamental anti-aging care to slow the pace of physiological ageing, and second, medical management of illnesses that affect the elderly.8

In terms of the second component, traditional contemporary medicine appears to be powerful, albeit the end effect may not be as significant. Ayurveda, on the other hand, has the ability to avoid diseases via health promotion and to manage ailments that arise in old age.

METHODOLOGY

The Srotovikriti and geriatrics related material collected from authentic websites, Ayurvedic textbooks, Samhitas, Literatures, articles etc.

PHYSIOLOGICAL CHANGES OF AGEING DESCRIBED IN AYURVEDA

DECADES16	AGE RELATED LOSS OF BIOLOGICAL FACTORS
0-10	Loss of Childhood
11-20	Loss of Growth
21-30	Loss of Complexion
31-40	Loss of Intellect
41-50	Loss of Skin texture
51-60	Loss of Vision
61-70	Loss of Virility
71-80	Loss of Strength
81-90	Loss of Cognitive power
91-100	Loss of Locomotive ability

In his comprehensive and scientific classification of age, Acharya Sushruta defined old age as being above 70 years old.9 On the other hand, Acharya Charaka stated old age above 60 years.10 According to the Tridoshas core principles, Vata is the main dosha throughout old age.11 It causes tissue atrophy and involution, and is responsible for the majority of age-related symptoms. As people get older, their Agni becomes depleted, resulting in a loss of energy and vitality, as well as decay and atrophy owing to faulty metabolism.12

During this time, all of the dhatus, Virya, Indriyas, Ojas, bala, and utsahas gradually deteriorate, along with hair loss, skin wrinkles, chronic and recurrent cough, shortness of breath, difficulty to do everyday activities, and so on.13 In Ayurveda, ageing is referred to as the Swabhavaja vyadhi, which means that it is the natural state of a living person to age.14 The Sarangadhara Samhita provides an intriguing concept of biological component loss as a consequence of ageing over several decades of life (see table below).15 This is crucial because it can serve as a guide for selecting age-appropriate organ-protective Rasayana to slow down the ageing process.

SCREENING FOR HEALTH ISSUES IN GERIATRICS [17]

1. Bone mineral density (BMD) test at least once at the age of 65, then every 2–3 years after that.
2. Blood pressure should be checked at least once a year, and individuals with hypertension should be monitored on a frequent basis.
3. Every three years for serum glucose and haemoglobin A1C, more often in obese or hypertensive individuals.
4. Lipid profile every 5 years, more frequently in diabetics and those with cardiovascular disease.
5. Up to the age of 75, a stool occult blood test, sigmoidoscopy, or colonoscopy should be performed on a regular basis.
6. Mammography every two years for women between the ages of 50 and 74.
7. Pap smears every three years till you reach the age of 65.

SROTOVIKRITI [18]

The importance of Srotas in the disease's appearance - When Srotas are healthy, dosha, dhatu, and mala formation is excellent; however, when these Srotas are vitiated, dosha, dhatu, and mala formation is vitiated, and the body becomes ill. Srotas serve as our body's transportation system.19 The dhatus that is transported by Srotas is continually metabolised. No bodily part can grow, develop, or deteriorate without Srotas.

Srotovaigunya is important for the Samurchhana of dosha and dusyas at a specific location, as a consequence of which illness manifests within the body.[19]

SROTOVIKRITI SAMANYAKARANAS

- Srotovikriti samanyakaranas are vitiated by the Ahara and vihara that exacerbate the doshas and have qualities that are diametrically opposed to dhatus. Eg
- Diwaswapna has characteristics that are comparable to Medodhatu, vitiating Medas. (According to Chakrapani.)
- Ratrijagarana performs Vataprakopa and Kaphakshaya, therefore it's recommended for Vagbhata.[20]

DHATWANTARAVIKRITI

Rasa dhatuvriddhi is caused by Guru-Snigdhaannapana. Atichinta, on the other hand, causes rasa Kshaya. Sthanastha (structural vitiation) and Margastha (floral vitiation) are the two types of vitiation (vitiation in the channels). Dooshana is normally done through doshaswabhava (vitiation). As a result of consuming vitiated ahara and doing incorrect viharas, the srotas transporting the dhatus and malas become vitiated.21 It's possible that more than one srotas is involved in the disease's appearance. Dhatwanaradusti can be understood in this way. For example, in Shwasa, the malaroopikapha vitiates Pranavaha Srotas, producing blockage, owing to Rasava-ha Srotovikriti.

TYPES OF MANIFESTATION OF SROTOVIKRITI-

Atipravkruti (increased activity), Sanga (obstruction), Siragranthi (aneurysm), and Vimargagamana are the four forms of Srotovikriti manifestations (opposite direction).[15] These four kinds of Srotovikriti can appear separately or in combination. Sanga or, also known as srotorodha, is the source of the majority of illnesses.[22]

1. Atipravkruti is defined as atishayenapravrattihi in Sanskrit. One or more dhatus, doshas, Srotas, or malas are more active. E.g.:

a. Bahumutrata in prameha.

b. Atidravamalapravratti in atisara.

c. Rasa dhatuatipravrutti in Jalodhara.

d. Atipravratti of raktadhatuinadhogarak- tapitta.

2. Sanga- Also known as srotorodha, it is the polar opposite of atipravritti. It's called apravrutti, which means "obstacle." *Mutrakrichra is a sanga of mutravahas-rotas, for example.23

a. Swedaavarodha in Jwara.

b. Sanga of Vata in Gulma.

c. Sanga of purisha in Vibandha.

d. Sanga of Pitta due to kaphaavarana in Shakashrita Kamala.

e. Sangaof purisha in Grahanipurva- roopaavastha and Atipravrattiof purishain roopavastha.

3. Vimargagamana 24– It is described as Unmargagamana, which translates to "leaving one's own route to enter another." Doshas, dhatus, malas, lasika, ambu, and vasa can all achieve vimargaga-manain various vyadhis.

a. Mala intomutramarga in bhagandhara, for example.

b. Upward migration of apanavata in Udavarta.

c. The flow of food upwards in Chardi.

d. In Bhagandara–vimargagamana of Apanavata.

e. In Raktapitta, rakta moves via the mutravaha, purishavaha, Pranavaha, and annavahasrotas.25

4. Siragranthi is described as Kutilab-haavatwam, which implies thickening, new growth, or malignancies in Sanskrit. Granthi varicose veins, for example.

a. An arterial aneurysm is a type of artery that has a hole in it.

b. Arbuda.

c. Bronchiole enlargements as a result of bronchiectasis.

d. Arshas.

RELATION BETWEEN SHROTOVIKRUTI AND GERIATICS

Dosha-dushyasammurchana is the result of Srotovikriti. We obtain the knowledge of Vishista Samprapti of any ailment based on the lakshanas of Srotovikriti. It's critical to understand the sort of Srotovikriti present in a Vyadhi in order to choose the best treatment options.25 For example, to prevent Atipravratti in purishavahas, rotas such as deepana, pachana, and stambhana chikitsa must be used. It is necessary to follow Vibandha- Sanga of purishava has rotasanulomanachikitsa.

In comparison to typical individuals, the dietary needs of the elderly are different. People grow increasingly prone to malnutrition as they become older for a variety of reasons. As a result, the aged should eat a diet rich in grains, legumes, vegetables, and fruits. Drinking liquids on a regular basis and in little amounts is recommended.26 To prevent bone mineral loss in the elderly, a diet rich in dairy products, seafood, legumes, nuts, eggs, and other calcium-rich foods should be provided. Limit your intake of salt, oil, and high-protein foods. Light, freshly prepared, readily digested, and nutritious meals are ideal.

Rasayana is particularly concerned with nutrition, geriatric care, and rejuvenation. It is a solution to the problem of healthy lifespan. It is a specific regimen that combines rejuvenative medicines or medications, dietetics, a healthy lifestyle in general, and good psychosocial behaviour.27 It affects the body's essential features, such as dhatus, agni, and srotas, and therefore increases the nutritional value of circulating plasma, digestion, absorption, and metabolism, as well as microcirculation and tissue perfusion. 28 Nutrient tonics, antioxidants, anti-stress, adaptogenic, and immunomodulators are likely to be Rasayana medicines. All of these characteristics add up to an anti-aging effect. Recent research on popular rasayana medicines like as Aamalki, Aswagandha, Guduchi, Brahmi, and Chyavanprasha has shown evidence that these are effective anti-aging therapies.29 Some Rasayana are illness-specific, inducing unique immunological and bio-strength to fight a

specific disease. Naimittika rasayana, such as Shilajatu for diabetes mellitus and Tuvaraka for skin disorders and leprosy, are examples of such Rasayana.[30]

Panchakarma is a radical Ayurvedic technique of cleansing the body's micro-channels, allowing for greater nutritional status and rejuvenative action. It's good for preventing, promoting, and rehabilitating health, as well as managing a variety of systemic illnesses.[31] Selective panchkarma treatment, such as Abhyanga (medicated massage), Sarvanga dhara (Kayaseka), Nadi Sweda, Pinda Sweda, Shirodhara, Bringhana vasti, Matra vasti, and others, may be recommended in geriatric care to slow down degenerative processes and improve quality of life.

DISCUSSION

The Srotas are the human body's fundamental structure, which are stretched out like creeper branches. Because of its tight structural and functional connection with its equivalent Dhatus, the Sthoola Srotas can be regarded an organ system.[32] Blood vessels, arteries, and veins are the body's transportation systems, according to current science. According to Ayurveda, these are spaces or channels that are either contained, such as blood vessels and lymph vessels, or are gaps between tissues and organs through which not only blood and lymph pass, but also other substances.[33] However, liquid and gaseous substances such as Vata, Pitta, and Kapha can be transported via the gaps. Rasa is also transported, and Mala is eliminated. Dhatus' Srotas primarily transport nourishment, transformation, and excretion activities. It is a requirement for maintaining excellent health since Srotas' body cannot grow normally without it. Disturbance in the Srotas causes Dosha Samurcchana, which leads to illness manifestation. 9) Ahara and Vihara, which exacerbate Dosha and have the opposite property of Dhatus, can vitiate Srotas, resulting in disease aetiology.[34]

Ayurveda has significant potential to provide significant complementary therapeutic treatment in a spectrum of illnesses affecting the aged, and this has to be understood by practising physicians of all streams.35 Brahmi and similar other Medhya drugs in the treatment of senile dementias, Arjuna, Guggulu, and Pushkarmoola as cardioprotective in cases of Ischaemic heart

disease, Arjuna, Guggulu, and Pushkarmoola as cardioprotective in cases of Ischaemic heart disease, Arjuna, Guggulu, and Pushkarmoola as cardioprotective in cases of Ischa Varuna and Shigru are used to treat senile prostate enlargement, Triphala is used to treat senile visual disorders,36 Kapikacchu is used to treat Parkinson's disease, Amrita and Amalaki are used to treat immunodeficiency, and Sirodhara and Sirobasti are used to treat tension headaches and various neurodegenerative conditions.[37,38] Similarly, the Pindasweda technique of Keraliya Panchkarma treatment is well-known for its rehabilitative properties in a variety of neurodegenerative and myopathic diseases. Dashvidha pariksha, Sadvritta, Swasthvritta, Satvika diet, Yoga, Meditation, Geriatric panchkarma, and Rasayana Therapy are some of the Ayurveda-based geriatric treatment options.[39]

CONCLUSION

To treat a patient holistically, an Ayurvedic physician must have a thorough understanding of the various types of Srotovikriti. As a result, any sort of Srotas deficiency must be corrected as soon as possible in order for a patient's health to return to normal. Srotovikriti is divided into two categories by Acharya Charaka: Ayanabhuta and Adhistanabhuta. According to Chakrapani's commentary, Ayanabhuta implies Margabhuta, or disease in the channels (physiological). Increased life expectancy, increased urbanisation, and lifestyle changes have resulted in a slew of issues for India's elderly. As a result, geriatric health care must be integrated into primary health care. It is important to remember that only a comprehensive and multidisciplinary strategy can provide complete health care to the elderly. The process of ageing was clearly explained in detail in Ayurvedic literature, and a new medical profession known as Rasayana Tantra was created to discuss a range of treatments and procedures to promote healthy lifespan. It is undeniably Ayurveda's strength in the context of Geriatric care. As a result, there is a need to raise public knowledge of Ayurveda's effectiveness in geriatric health care. The development of an efficient holistic geriatric care regimen integrating Rasayan, Panchakarma, dietetics, and Ayurvedic medications is urgently needed.

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A CONTROLLING MEASURES FOR GERIATRIC CARE IN AYURVEDA

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Abstract :- The Prevalence of illness increases as we got ageing at the same time, life expectancy decreases. Ayurveda, has got potential for prevention of diseases by health promotion and management of disease occurring in old age. We discus lifestyle recommendations such as exercise, yoga, Rasayana therapy and good nutrition. Jara Chikitsa or Rasayana in Ayurveda is a unique Therapeutic methodology to delay ageing and to minimize the intensity of Problems occurring in this degenerative phase of one's life. Prevention and management of health problems could help the elderly to improve quality of life and remain self dependent for their daily activities to maximum possible extent.

Keywords:- Geriatrics, Ageing, Rasayana, Geriatrics in Ayurveda, Geriatrics care.

Introduction :-

Ageing is a complex multifactorial and inevitable process, which begins before birth and continuos through at the entire life span. Twenty first century is witnessing a gradual decline in fertility, and with increases in life expectancy, the society will need to grapple with issue of longevity. The world population of the elderly is increasing and by the year of 2050, adults older than 65 years will comprise 1/5th of the global population.

Geriatrics care has to address two fold of problems, firstly the basic anti ageing care to retand the rate of physiological ageing and secondly the medical management of disease specially occurring in old age. Ayurveda has a focused branch called Rasayana which deals with the problems related to ageing and methods to counter the same. Its unique therapeutic methodology delays ageing and minimizes the intensity of problems occurring in this degenerative phase of life by restoring physiological processes that influence metabolic and immunological status. Such interventions are significant in the context of geriatric care.

Aim and Objectives :-

1. To elaborate preventive measures in geriatrics by Dinacharya, Ritucharya, Rasayana, Panchakarma therapy.
2. To consolidate some preventive measures on diseases based on Neurological, Neuro psychatric, cardiovascular, Endocrine, Respiratory, Gastrointestinal, Musculo skeletal, Genito urinary disorders in geriatrics.

Material Methods:-

Maintenance of a healthy life by one's own right action is called Swasthavritta which means the regime of abiding one's own nature. Health is the dynamic integration between our environment, body, mind and spirit. Ayurveda and other traditional Indian health systems lay emphasis on preventing the diseases. Elaborate description is available on personal hygiene encompass diet and regimen during daily routine (dinacharya), seasonal routine (ritucharya) and behavioural and ethical guidelines (sadvritta).

Ayurvedic understanding of geriatrics:-

Ayurveda considers ageing as the swabhavaja vyadhi i.e. it is inherent nature of the living being to get old. Sarangdhar Samhita present an interesting scheme of lose of different biological factors during different decades of life as a function of ageing (table below).

Decades	Age related loss of biological factors
0-10	Loss of childhood
11-20	Loss of growth
21-30	Loss of complexion
31-40	Loss of intellect
41-50	Loss of skin texture
51-60	Loss of vision
61-70	Loss of virility
71-80	Loss of strength
81-90	Loss of cognitive power
91-100	Loss of locomotive ability

Daily regimen (Dinacharya)

The Ayurvedic regimen of right living is designed for maintenance of health achievement of a long, healthy active life, providing relief from pain and disease thereby achieving satisfactory enjoyment of life and attainment of self-realisation.

Time to wake up

It is advisable to wake up during brahma muhurta (preferably between 4.00 a.m. to 5.30 a.m.).

Cleansing of teeth and mouth

After every meal in addition to early morning and before going to bed.

Drinking Water

Drinking water early in the morning according to one's capacity cleanses the body by enhancing the elimination of toxic wastes.

Bowels

One should attend the nature's calls.

Eye Care

Wash eyes with triphala water every day.

Betel Chewing

Chewing of betel leaves with small pieces of puga (Areca nut) and fragrant substances like cardamom, cloves, refreshes the mouth and enhance digestion.

Abhyanga (Oil Massage)

It is highly beneficial to massage whole body including scalp with oil everyday to prevent dryness of body and stiffness of joints due to ageing in elderly.

Exercise

Regular exercise builds up stamina and resistance against disease, clears the channels of body (srotas) and increases the blood circulation and efficiency of vital organs, promotes appetite and digestion and prevents obesity.

Bath

Bathing improves enthusiasm, strength, appetite, span of life and removes sweat and other impurities from the body.

THE DIET REGIMEN AND PANCHAKARMA (BIO-CLEANSING MEASURES) IN DIFFERENT SEASONS

Season	Diet and regimen	Panchakarma (Bio-cleansing) regimen
Hemant (Nov-Dec)	Massage, exercise, intake of sweet, sour, salty items	-
Sisira (Jan-Feb)	Use of woolen blankets, measures for protect against cold	-

Vasanta (March-April)	Massage exercise, fomentation, light and dry food etc.	*Vamana (Theraputic Emesis)*
Grisma (May-june)	Seasonal fruits like amra, Jambu, milk, sweets, butter milk etc.	-
Varsa (July-August)	Avoid stagnant water in surrounding area and sleeping on ground	*Vasti (Administration of medicated enemata)*
Sarada (Sep-Oct)	To sit in moon light in the first quarter of night	*Virechana(Theraputic purgation)*

Specific Rasayana Drugs according to age

Age in yrs	**Bio-values which are on decline**	**Suitable Rasayana**
1-10	Balya (Childhood)	Vacha (Acorus calamus), kasmari (Gmelina arborea), Svarna (Aurum)
11-20	Vridhi (Growth)	kasmari (Gmelina arborea), Bala (Sida cordifolia), Asvagandha (Withania somnifera)
21-30	Chavi (color and complexion)	Amalaki (Phyllanthus emblica), Lauha Rasayana
31-40	Medha (Intelligence)	Sankhapuspi (Convolvulus pluricaulis), Yasthimadhu (Glycyrrhiza glabara), Asvagandha (Withania somnifera), Guduchi (Tinospora cordifolia)
41-50	Twak (skin Lusture)	Bhringraj (Eclipta alba), Somaraji (Psoralea corylifolia), Haridra (Curcuma longa)
51-60	Dristi (vision)	Triphala ghrita, Saptamruta lauha

61-70	Sukra (semen)	Kapikacchu bija (Mucuna pruriens), Asvagandha (Withania somnifera), Milk, ghrita
71-80	Vikrama (Valour)	These age group are not fit for Rasayana karma
81-90	Buddhi (Wisdom)	
91-100	Karmendriya (Muscles and organs)	

Preventive Measures

Neuropsychiatric Disorder

1. Chitoudveg (Anxiety neurosis)
   - Use madhura Rasa Pradhan Ahara and buffalo milk
   - Follow sadvritta (mental hygine)
2. Manoavasada (depression)
   - Use fiber rich food like whole grams, whole Fruits, fresh vegetables, Amalaki etc.
   - Be active physically and mentally.
   - Engage in social activity.
3. Smurti nasha (Dementia)
   - Use of Sali variety of rice, mudga, dharoshna dugdha, leaves of bramhi, tanduliya and vastuka, leaf and fruit of patola, fruit of kusmanda and drakhya.

Respiratory Disorder

1. Jirna kasa (Chronic bronchitis)
   - Use of Godhuma, mudga, Kulatha, old rice, pravala, Rasona, Haridra, Adraka, Krushna Maricha, mishri, guda, tulsi, cows urine, ela, sunthi, goat milk, luke warm water are beneficial.

- Practice pranayama and yoga Regularly

Gastro intestinal disorder

1. Vibandha (Constipation)

- Consumption of godhuma, mudga, old rice, Rasoana, seasonal fruits, Hingu, drakhya, amalaki, haritaki, pipali etc.
- Avoid suppression of natural urges

2. Ajirna (indigestion)

- Consume light and easily digestible food and chew food properly .
- Practice vajrasana after milk

Musculo skeletal disorder

1. Asthi sausirya (osteoporosis)

- Use of masa, tila, milk, milk products, dietrary article rich in calcium.
- Regular Abhyanga of joints with medicated oils.
- Prevent Injury to joints

2. Sandhivata (Osteoarthritis)

- Use of masa, Palandu, rasona, Tila, Sunthi, Adraka, Mulaka, ladiesfinger, kusmanda, mudga, fruit like dadima, Amra, drakhya indiet.
- Perform adequate physiotherapy.

Genito –urinary disorder

1. Asthila (Benign prostatic hypertrophy)

- Use of wheat, old rice, mudga juice, kulatha, yava, haridra, Adraka, patola, sigru, cucumber, watermelon, coriander, cumin seed etc.
- Avoid pea, black gram, spinach, jamun, mustard, excess hot and spicy food.

CONCLUSION–

To live a long and healthy life is every individual's wish. Due to changing lifestyle and thus not able to follow the rules of dietetics human beings have led to an emergence of varied problems for the elderly in India. It is obvious that the process of ageing was elaborately described in ayurvedic texts and a separate medical discipline called Rasayana tantra was developed which described a variety of methods and measures to promote healthy longevity. Undoubtedly, it is the strength of Ayurveda in the context of geriatric care Rasayana is a therapy which bestows excellent rasa which ultimately result in promotion of longevity, alleviation of old age and diseases so as to enjoy the full span of life. It is the demand of the hour to develop and effective holistic protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines and lifestyle and yoga.

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TO EVALUATE THE PROCESS OF AGING AND PREMATURE AGEING WITH REFERENCE TO SWABHAVOPARAMA VADA AND SATKARYAVADA

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Abstract:- The entire life events when reduced into the field of time, it takes three distinct phases of existence as birth, growth and death. This evolving model of human life is one of the prime subjects of Ayurveda, dealing with उत्पत्ति (creation), स्थिति (sustenance) and लय (destruction). The process of transformation of उत्पत्ति to लय, is encountered with an exaggerated degeneration of tissues which is termed as जरा. Incidentally a major number of such calamities occur after a certain age. Hence the age group fitting into this framework of deterioration is called as जरा. In our diverse and progressing world, the ageing process is one of the few things that unifies and defines us all. As every human being must grow older, ageing is an issue that concerns us all. The process of deterioration is called as जरा. Ayurveda is an ancient science based on different school of philosophies. Fundamentals of Ayurveda laid down after many experiments and hence these principles are still applicable in today's era. In context of Swabhavoparam vada, Acharya Charak considered kala as an example to clear the concept of Swabhavoparam vada. Here we

applied this concept to explain the process of jaran/kahsya/shirnan with aging with special reference to शीर्यते तत् शरीरम् |

In Ayurveda geriatrics is considered as separate branch among 8 branches and detailed description of Rasayan therapy which is considered as one among best preventing modality to prevent premature aging is explained in detail.

Keywords:– JARA, LIFE, SWABHAVOPARAM VADA, RASAYAN.

INTRODUCTION –

The entire life events when reduced into the field to time, it takes three distinct phases of existence as birth, growth and death. This evolving model of human life is one of the prime subjects of Ayurveda, dealing with उत्पत्ति (creation), स्थिति (sustenance) and लय (destruction). The process of transformation of उत्पत्ति to लय, is encountered with an exaggerated degeneration of tissues which is termed as जरा.

Swabhav means natural and uparam means destruction1. Acharya explains that there is cause for samya and vaishamya of dhatus but there is no cause for their destruction and is known as sawabhavoparam. The destruction of any objects own nature, qualities or form is known as swabhavoparam. The factors which produce Dhatus are in balanced state then Dhatus also remain in balanced state. But the balanced or imbalanced dhatus will undergo destruction naturally2, without any cause.

Now a days this process of destruction is quite fast and everyone is worried by the concept of early aging. Though swabhavoparam vada explains this process of destruction is natural without any cause still many factors are responsible to fasten this procedure and as a ayurvedic physician our duty is to prevent this rapid destruction hence concept of Satkaryavada is also need to take consideration of these factors to avoid the faster destruction and let nature does him its own work. And that’s the role of physician and aim of

Ayurveda to promote and protect health of healthy individual and cure for diseased, immunosuppressed person with help of ayurvedic principles.

CONCEPT OF SWABHAVOPARAM VADA

Swabhav means nature and uparam means destruction. This concept is contributed by acharya charaka. Acharya says that there is cause in samya and vaishamya of dhatus but there is no cause in their destruction and this is known as swabhavoparam. Acharya chakrapani comments that karana nirapekshat uparamo vinash means swabhavoparam or destruction of any dhatu does not require any cause. Acharya Gangadhara explains it as svasya dharmasya roopasya paramo or destruction of any objects own nature, qualities is known as swabhavoparam.[3]

Acharya Chakrapani explained it with an example of lamp. As we need oil, lamp and wick to lit a lamp and it keeps gloving until the oil lasts. Then it automatically stops without any reason.

Acharya charaka supported this concept with example of kala. Bhava padarth destructed at each and every moment but no cause is seen in this process, which is similar to kala as it getting destroyed continuously. Kala is continuously passing away and getting destroyed very fast. Due to fastness its destruction cannot be judged. Similarly, all objects associated with kala are getting destroyed with it and cause cannot be guessed.

CONCEPT OF SATKARYA VADA -

Body has two states vikriti and prakriti or sama and vishama. Both conditions are under the control of hetus. Here acharya has not explained the cause of destruction so can be considered as destruction is natural process. Acharya also explains that no bhava can be generated without any cause, so anything being produced need cause for it, while the abhava or destruction of these is due to sawbhava and which occurs naturally. So, the importance of satkaryavada is indirectly highlighted here.

Svabhavaj jara or kalaj jara is unavoidable and irreversible but Akalaj jara4 can be reversible process if taken precautions and early management.

SHEERYATE TAT SHAREERAM –

Acharya chakrapani given a famous quotation "sheeryate tat shariram" which means "pratikshanam sheeryamanam iti shariram". One which is continuously going destructed and finally diminished is sharira5. The process of metabolism and catabolism going hand in hand. The process of metabolism is faster in childhood and young age of life i.e. in early and middle phase of life. At later stage i.e. in adult age the process of catabolism is faster than metabolism which leads to early destruction of dhatus, bodily entities at faster rate like greying of hairs, wrinkling of skin, falling of teeth, diminished power of digestion, osteoporotic changes in bones etc. which is nothing but process of aging.

Aging is a continuous process from childhood to old age i.e. birth to death. At biological level, aging results from impact of the accumulation of wide variety of molecular and cellular damage over time. This leads to gradual decrease in physical and mental capacity, growing risk of diseases and ultimately death. If this compared to Swabhavoparama vada explained by acharya charaka there is actually no cause for process of aging and death but for formation of body tissues which is the base of human body metabolism is required which followed by the catabolism. Jara, mrityu and swabhavika vyadhis can be understood and correlate with concept of swabhavoparam.

CONCEPT OF EARLY AGING –

The quality of the dhatus should be excellent for healthy and long life. Definition of healthy individual – swastha purush according to Ayurveda explained by acharya sushruta, "samadoshah samagnishch samadhatu malakriya Prasanna atmendriya manah swastha iti abhidheeyate"6 which means balanced state of dosha, dhatu, mala (body components – physical) and Prasannta of atma, indriya and mana (psychological-social wellbeing) is important for healthy and long life. Definition of health according to WHO also explains same as "Health is a state of complete physical, social and mental wellbeing and not only absence of disease or an infirmity.

In todays era of modernization youth is attracted more towards the velocity, speed. Fast food, fast journey with flights-bullet train, ready to eat packed

food, improper sleep, unsteady and unfocused mind, mood swing leading to the destruction in all physical, mental and social wellbeing factors. The term premature aging syndrome represents human conditions in which multiple tissues and organs show features of accelerated aging.[7]

Many causative factors responsible for early aging which includes exposure to extreme heat and sunlight, genetic factors, irregular sleeping habits-late night awakening, diet specially junk food-fast food-sugars-refined carbohydrates-caffeine, alcohol, smoking habits, stress-triggering inflammatory responses in human body and hormonal imbalance directly responsible for premature or early aging.

SIGNS AND SYMPTOMS OF EARLY AGING[8] –

PHYSICAL – Vali (wrinkles), Palitya (greying of hairs prematurely), Khalitya, Ojakshaya, Shukra apravartanam, Mamsa shaithilya (muscle weakness), Asamartha chesta (inability to work), Analpameda (debilitated).

MENTAL – Medhahani (decreased functions of intellect), Avasannata and nairasya (depression), Smritihani (loss of memory), Utsahahani (Decreased enthusiasm), Buddhihani (deterioration of wisdom).

MANAGEMENT -

Acharyas explained in detail treatment and management of such Akalaj jara with dravyabhuta and adravyabhuta chikitsa. Ultimate aim is to achieve Hitayu, Sukhayu and Dirghayu.

1. Rasayan
2. Swasthvrutta – dinacharya and ritucharya
3. Sadvrutta

1. RASAYAN – Rasayan word composed of two words RAS-nutritional essence and AYAN-its transportation throughout the body for efficient assimilation in body. Rasayan is one among Ashtang of Ayurveda according to Acharya Sushrut.

Acharya Sushruta defines Rasayan as "Rasayantantranam vayahsthapanay aayu medha balakaram roga apaharanam samartham cha"9 which means that branch of ashtanga Ayurveda where all measures which help for attaining longevity, enhance intelligence and mental strength and increase immunity against various disorders are included. Rasayan improves metabolic processes, which results in apposite biotransformation and produces the best quality body tissues.

Acharya Sharangdhara clearly stated that Rasayan includes use of certain dravyas as Rudanti, Guggulu, Haritaki etc. that prevent early aging and prevents many disorders also.[10]

Number of formulations like Amalaki rasayan, Haritaki rasayan, Pippali rasayan etc mentioned in classic with particular aim and objectives.

DHATU	RASAYANA DRAVYA
RASA	MILK+GHEE, YASHTIMADHU, DRAKSHA, KHARJURA
RAKTA	AMALAKI, BHRINGARAJ, LOHA
MAMSA	ASHWAGANDHA, BALA, NAGABALA
MEDA	GUDUCHI, HARITAKI, GUGGULU, SHILAJIT
ASTHI	LAKSHA,VANSHALOCHANA, SHUKTI
MAJJA	LOHA, VASA, MAJJA
SHUKRA	ASHWAGANDHA, SHATAVARI, ATMAGUPTA

2. SWASTHAVRUTT – Acknowledgement of rules of daily living as prescribed by Ayurveda, slows the process of aging and prevents many life style disorders including early aging. Techniques like Abhyang, Snana, Udvartana etc explained in dinacharya and following seasonal regimens explained in Ritucharya helps in slowing aging process.

3. SADVRUTTA– Rasayan is not only drug therapy but a specialized, scientific procedure to practice in the form of rejuvenative recipes, dietary regimen and special health promoting conducts and behaviour i.e. Achara Rasayan, which gives similar effects of Rasayan. Acharya Charaka explained in detail about Achara rasayan.

Acharya Vagbhat in sutrastha, at the end of Roganutpadaniya Chapter explains "Nityam hitahar vihar sevi sameeksyakari vishayeshu asktah data samah satyaparah kshamavan aptopasevi bhavti arogah"11 which means A person who practices regularity in lifestyle and mindfulness in eating habits, is a deliberate in all his actions, not over – indulged worldly Pleasures, who is generous, just truthful, forgiving in nature, who is service -minded and helpful to one's own kin – will remain unaffected by diseases.

CONCLUSION– In this modernized era, lifestyle and faulty dietary habits are the main causes for premature ageing which is a topic of concern for all. Process of kalaj jara which is irreversible can be understood with Swabhavoparam vada and Process of Akalaj jara-early ageing which can be reversible understood by Satkaryavada. To prevent early-ageing we should follow swasthavrutta (personal regimens-hygiene) and Sadvrutta (behaviour and personal conducts) along with Nidan parivarjana i.e. avoiding causative factors. Rasayan is a magical weapon to slow down to delay the ageing process. Everyone should follow Rasayan, Sadvrutta and Swasthavrutta to combat the fight against premature ageing.

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GERIATRIC DISEASE -CARE AND CURE

TRI-MARMA IN GERIATRICS

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Abstract:-The great ancient science Ayurveda has described various important major of life out of which Marma are the points where sira, snayu, Asthi, sandhi comes together these are the points where all pran get accumulated according to their effects Marma are classified on various type but out of this all types of Marma acharya Charka has explained Tri Marma as Shir ,Hridhay and Basti.Jara awstha is end stage of human life where all Dhatu goes in to the kshin awstha here in these paper there is explanation and importance of Tri Marma in Jara awstha is explained and how we can protect or maintain the health of these three vital organs.

Introduction:

Ayurveda considered some vital parts of body as Prana sthana (where life resides) & these vital points termed as Marma. The injury to these Marma points may be responsible for serious consequences. The classical text of Ayurveda described 107 Marmas points.[1-3] Sadhyopranhar, Kalantarpranhar, Vaikalyakar, Vishalyaghna, Rujakar are Marma described anciently. Dhamani, Sira, Asthi, Mamsa, Kandara, Sandhi and Snayu are the sthana (sites) used for Marma chikitsa where Abhyanga (massage) and Mardana (Acupressure) performed. Marma points also help to balance Tridoshas and Trigunas since it involve various pranas like; vayu, sattva, agni, rajas and atma. [4]

TRIMARMA: Marma Traya are included in Pranayatana i.e. site of Prana. [4] As the base is destroyed, the dependent is also destructed. Likewise, the destruction of any of the three Marma may destroy the Prana. One should protect these three Marma from external as well as internal injuries. [5] Trimarma included in Sadyahpranahara Marma. Sirah: All the sense organs and the channels carrying the sensory and vital impulses from the Sirah are like the rays from the sun. This verse truly signifies Sirah as a Trimarma as it correlates it completely to the Brain. [6] Hridaya: It is a structure which resembles a Pundarikena, Kamalamukulakaram (lotus) in inverted position. When body is in active phase it expands and contracts in inactive phase. [7] Vasti: Acharya Charaka also quotes the importance of Vasti as a Trimarma saying that it means that the region named Vasti is in the middle of Sthula Guda, Mushka, Sevani, the Nadi (channels) transporting Mutra and Shukra. It acts as the Reservoir of Mutra. As different rivers fill the ocean in similar fashion all the Ambuvaha Srotas (channels) transporting water fill the Vasti.

Geriatrics or Jara Chikitsa or Rasayana in Ayurveda is a method to control/slow down/arrest the ageing process in the human being during the degenerative phase in one's life. Jara awstha is nothing but kshin awstha of all dhatu, because of this there is blood supply, nutrition and every important thing which maintain the Swsthya sharir get hampered which further cause many disease related to nervous system, circulatory system and urinary system and many other system. but proper care is taken of tri marm as shir hridya and basti so one can maintain their health even in, Jara awstha also periodic rutu shodhana according to awstha of person beneficials to reduce risk of tri Marma ailment one can take various Rasyan as amalaka, Shatavari and may more medhya balya rasyna which maintain the health of tri Marma. In Geriatric phase many disease likewise Alzheimer's disease, Many cardiac disease as Cardiomegaly, arthrosclerosis due to age related changes in Sira, snayu And dhamni mainly due to dhamni kathinyata. by maintain proper diet and following all the regimens of Rutucharya, dinchrya we can easily overcome to these structural changes in body and can maintain health.

Discussion: various herbs and many more Ayurveda formulation can help to maintain swasthya of tri marma as baly ,medhya rasyan are brahmrasyan,

chywanprash, ashwgandha awlehmahatriphla churn, triphla churn, ashwangdha churn, agstya rasyan, amlaki rasyan.In various Neuropathies as Rason, Gugul, bala, ashwgandha in brainnand meomary disorders as brahmi Mandukparni, Jyotismati, tagar, disease of eye Jyotishmati, Diabetes Shilajatu, Haridra, tejpatara, methika, lipid disorder guggul, Pushkarmul. These various remedies of Ayurveda along with all the regimens of Rutucharya and dinchrya can increases the the strength of overall health which may improve blood circulation of body and all the saptdhatu kriya are becomes more better. Anatomically various changes occur in Shir Hridya and basti in old age but by Taking these all precaution we can improve the health in Jara awstha.

Conclusion:

From above we can conclude that even though there are many more anatomically physiological changes occurs in human body as age goes on increase specially in tri marm but then also we prevent all type of disease in Jara awstha by taking proper care and tri marm are very important in maintain health in Jara awstha.

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TRI-MARMA IN GERIATRICS

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Abstract:- Geriatrics has been a focus of research in Conventional Medicine and Alternative too. Ayurveda also has a lot to offer in the same. The concept of Marma is a forte of Ayurveda. Acharyas have emphasised the Tri-Marmas as the crucial Marmas in the body on which the quality and continuity of life depends & therefore application of knowledge related to these is of utmost importance. The essay tries to establish the correlation of this ancient knowledge to conventional medicine. The aggravation of Vaat dosha in old age is correlated to the various signs, symptoms, conditions and diseases caused by the marmabhighaat on the Tri-Marma. The article is a brief effort to establish the importance of Tri-Marma and their application in Geriatrics.

Introduction:

The concept of Marma is a speciality of Ayurveda. Texts describe that there are some areas in the body which are vital & where there is a conjunction of two or more of various body tissues & structures like blood vessels, nerves, musculature, joints, etc. These are identified to be vital to such an extent that an injury could result in conditions ranging from severe pain to even death. Ayurveda mentions 107 such areas in the body which are further classified according to various aspects based on location, composition, effect of injury, etc. Acharya Charak has emphasised on a triad out of these Marmas to which

an injury or deterioration of these may cause severe impairment or death of the individual. This Triad is identified as the Tri-Marma and comprises of Marmas related to the Shira (Head Region), Hriday (Heart Region) & Basti (Bladder Region).

Geriatrics is a branch of Medicine which refers to the Medical care of Older Adults which comprise of people who can be classified as Senior or Super Senior Citizens (above the age of 65). Geriatrics relates to support, treatment and prevention of diseases & symptoms to which this population is predisposed and relates to a lot of lifestyle, degenerative and ageing disorders. The Ayurvedic segment which co-relates to Geriatrics goes beyond its modern counterpart and incorporates even anti-ageing aspects in its scope which is better known as Rasayana Chikitsa.

The Tri-Marmas

The Hriday Marma is mentioned to be situated between the breasts, at the chest level opening of the stomach it is the seat of all the Trigunas (Satva, Raja & Tama) which affect the Manas, it is a Sira Marma and around a palmful (Swapaanital) in length. Any severe injury to it can be fatal (Sadyo pranahara). Conventional Medicine also recognizes Brain, Heart & Lungs as an Important Triad known as the Tripod in the Body, considering the seat of the heart as mentioned in the text its proximity with the bronchus and a high chance of getting affected due to any disturbance in the lungs, the Hriday Marma can be concluded as a functional cardiovascular-respiratory area in the chest.

The Basti Marma is mentioned to be situated in the pelvis and mentioned as the store house of urine. It is the place where Ashmari Vran (wound due to a renal calculi) occurs, it is a Snayu Marma and around a palmful (Swapaanital) in length. Any severe injury to it can be fatal (Sadyo pranahara). Conventional Medicine mentions that a rupture of the bladder due to any injury can be fatal especially in case there is a leakage of urine in the intra-peritoneum or the extra-peritoneum cavity, further severe ruptures can result in the tear in the peritoneum. The description of Ashmari Vrana and the relation of the Marma with the urinary system this marma may be taken as the functional urino-genital structures in the lower abdomen.

Unlike Hriday and Basti, Shira has not been mentioned as a Marma separately in the texts rather in the Shira region 10 separate Marmas have been mentioned in the Texts viz. Vidhura, Phana, Apanga, Avarta, Utkshepa, Shankha, Sthapani, Simanta, Shrungataka & Adhipati most of them are either Sadyo Pranahar, Kalantar Pranahar (causing immediate or delayed fatality) or Vaikalyakar (functional impairment). This group of Marmas also belong to separate genres unequally divided between Asthi Marma, Sandhi Marma, Sira Marma, Dhamani Marma & Snayu Marma. It is very difficult to discuss and conclude here as to which Marma corresponds to which organ or area however looking at Marmaaghaat (Marma Injury) symptoms mentioned for each of the above it can be concluded that each of the Marma has an underlying correlation with a functional aspect of the brain due to inflammatory or vascular reasons or a sense-organ viz. Injury to Vidhura causes Deafness, Phana causes Anosmia, Apanga causes Blindness, Avarta causes Impaired or Loss of Vision, Shankha, Utkshepa, Sthapani, Simanta, Shringataka & Adhipati may cause immediate or a delayed death. The Shira can therefore be concluded to be the senso-neural components associated with the Brain.

Common Symptoms, Conditions and Diseases in Geriatric

Various statistical observations & studies point out that following common symptoms, conditions & diseases are often found in Geriatric patients / individuals, due to various changes which happen in their bodies: The major ones are :-

1. **Sensory Changes :** Related to Hearing Loss, Vestibular Dysfunction, Visual Acuity
2. **Changes related to Muscle Strength and Fat :** Steady & Continuous decline in both
3. **Immunosenescence :** Changes in immune system which makes more pre-disposed to infections
4. **Urologic Changes :** Incontinence & residual urine with low Immunity causes infections

5. **Changes in Functionality :** Power, Fragility, Disability could be due to reasons neural / muscular
6. **Changes in Brain Functions :** Like Depression, Alzheimers, Parkinsons & Dementia
7. Conditions like Diabetes, Hypertension, Osteoarthritis
8. Diseases like Cancer

Marmaghaat:

A Marma is said to show symptoms when there is a Marmaghaat (Injuries to the Marma), Ayurveda has always proposed 2 types of reasons for all diseases in the body, External & Internal. The Internal reasons for diseases are further divided into Shareer & Manas (Physical & Mental). The Gunas of Mana have a direct effect on the Doshas of the Body and vice versa. Therefore it can be inferred that a Marmabhighaat can not only happen due to an external injury but even because of certain internal changes in the body, this is further exemplified by the fact that Hetus of Hridroga, which is a Marma sthaan are both Nija, Agantuja; Shareer & Manas.

Another fact which needs to be emphasised here that though the Marmas are classified as per the effects of injuries where some marmas are sadyo pranahar, it is to be noted that Acharyas also mention that if the severity of the injury to a Pranahar Marma is less it will present symptoms of a Vaikalyakar Marma, and if the severity is even lesser, it will portray the symptoms of a Rujakar marma. Thus it is clear that it is the severity of the injury which is the main base for the symptoms shown by the abhighaat on the marma.

Therefore while abhighaat (injury) is usually related to a physical trauma certain internal changes in the body may also be correlated with abhighaat on these important Marmas. Interestingly even in Conventional medicine conditions like hemorrhages or infarctions and their after effects are referred to as Cardiovascular or Cerebral or Renal Accidents or Injuries without any sort of external physical trauma happening in the same.

Vaata dosha is the manager of the body in its normal state, and a damager when increased. It therefore acts as the protector and the destroyer of various parts of the body including marma and associated organs. It is the prime dosha which increases in case of an external abhighaat and therefore can be inferered to be the prime abnormal cause in an internal abhighaat. Old age is mentioned to be a time span wherein Vaat dosha is in an augmented condition and can easily convert to an abnormal and enraged condition, which further can damage the body and therefore in this age conditions like osteoarthritis, osteoporosis, nutritional deficiency, insomnia, circulatory disorders are commonly found in people. This clarifies that that they are maximum chances that Vaat dosha in its aggravated state can cause marmabhighaat in old age.

Discussion :

The symptoms of Marmabhighaat which are mentioned in the texts are as follows: pain and abnormal throbbing, pulsations & tremors, loss of sensation of body & organs, delusion, perspiration, syncope, dyspnoea, giddiness, restlessness, debility, burning pain in heart desire for cold, perspiration, etc. Correlating these we can infer that most of them are either a symptom of Vaat vruddhi (accrual) or Vaat prakop (exaggeration). If we correlate the above to the tri-marmasthaana mentioned in the texts and the various changes, symptoms, conditions and diseases occurring during the old age we could very easily map a linkage between the three. To clarify with examples tremors which relate to the functioning of the brain can be correlated to Parkinsonism which is a disease due to improper nerve impulses, burning pain in heart and dyspnoea can be correlated to the various cardiovascular and respiratory symptoms and conditions in old age. Depression & Dementia can be correlated to the functional impairment of the Marma in the Hriday and the Shira. The sensory loss of various organs can be correlated to the functional impairment caused by vaat prakoop in various marma of the Shira, Urological changes & incontinence, repeat infections and disorders of the filtration mechanism of the kidneys can be correlated with the marmabhighaat to the Basti, it could also include the prostatomegaly which is also very common in old age, and so on and so forth.

Conclusion :

Concluding from the details above it can be safely inferred that aggravation in Vaata due to old age may be the sole reason for occurrence of various symptoms, conditions and diseases which happen in the Tri-marma in Geriatric irrespective of whether the abhighaat is external or internal. Vaat aggravation in old age which is physiological may be further exacerbated due to various hetus like a bad lifestyle, fall, malnourishment, insomnia, wrong food habits, excess exposure to vaat causing factors, vegadharana, etc which may result in the increased internal injury to these Tri-marma. These factors may causing a horde of changes in the functional aspects of these Tri-marmas resulting in different discomforts, effects, syndromes and ailments related to them. The same may not only exhibit symptomatic alterations but also depict anatomical changes in the body, eg. Cardiomegaly, Cerebral Atrophy, etc. The Tri-Marmas most of which are pranahar in nature therefore have a special importance in Geriatrics as quality & continuity life in this age depends on the smooth and efficient functioning of these areas.

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CONTROLLING MEASURES FOR THE GERIATRIC DISEASES

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Abstract:- Geriatrics–The Branch of Medicine concerned with the Diagnosis treatment and Prevention of Disease in the older peoples and problems specific to aging.

Ayurveda comprises of a specialized branch that deals with aging and has rich source of Drugs formulations, yoga, Rasayan therapy and good nutrition.

"Jara chikitsa" is an ancient subject of Ayurveda. As an Ayurveda literally means the 'science of life'. All the deeds that enhance the quality and longevity of life come under Ayurveda. Ayurveda is basically divided and studied under eight main branches – Kaya, Bala, Grah, Urdhwanga, Shalya, Danshtra, Jara, Vrisha. They correspond to the subjects dealing with Medicine, Pediatrics, Psychological and mental disorders, ENT ophthalmology and dentistry, Surgery, Toxicology, Geriatrics and gerontology and Reproduction related disorders respectively. So, Geriatrics and Gerontology was main and important branch of the Indian traditional medical science.

Keywords- Aging, Geriatric, Ayurveda, Rasayana

Introduction:

Ageing is a natural progressive and inevitable biological process, characterized by gradual decline of cellular function as well as progressive structural changes in all over body system.

Aim and objective

1. To re-evaluate, discuss, and elaborate the various Ayurvedic concepts and principles related to aging.
2. To understand the health-related problems of old age, to diagnose and treatment.

Musculoskeletal and neuropsychological disorders : Stroke, osteoporosis, fractures, arthritis, balance related disorders, etc. are mainly dealt in the chapter of Vaat Vyadhi i.e. diseases caused due to vitiated Vaat Dosha. Many drugs and panchakarma procedures are indicated for the management of these disorders. Panchakarma procedures like 'Basti' therapy are mainly indicated for the treatment of vaat vyadhi. Including alternate per rectal administration of herbal decoction based medicine (Niruha Basti) and that of medicated oils (Anuvasana Basti) provide strength to neuromuscular system. Massage (Abhyanga) with medicated oils and sudation procedures provide nutrition to muscles and prevent their atrophy. The oils act as effective analgesics as well as improve local blood circulation to nourish the degenerating tissues of joints. Special oleation and sudation procedures like Katibasti, Janubasti, Valuka pottali sweda, Nadi sweda, etc. are very effective in the management of degenerative musculoskeletal disorders like osteoarthritis, osteoporosis, fractures, vertebral column and spinal cord related disorders like PIVD, sciatica, etc.

Dementia syndrome, Mild cognitive impairment, Depression and Alzhiemers disease are common neuro-psychological disorders associated with ageing. Concept of Satvavajaya Cikitsa (Psychological therapy for all disorders) is uniquely mentioned in Ayurveda. Panchakarma therapy to clean the channels of body, mind. Panchakarma Therapy – Vamana, Virechana, Basti, Nasya, Raktamokshan can be administered as per necessity. Anjan, Shirodhaara, Shirobasti, Sarvanga Abhyanga, Sarvanga Sweda, Dhumpan, etc.

Cardiovascular disorders : Heart, along with the major blood vessels is considered to be one of the main three vital organs Major disorders of cardiovascular system like Coronary Artery Disease are the result of atherosclerosis mainly. According to Ayurveda, it is the pathological state resultant from vitiated function of kapha and pitta which together obstruct the normal functions of Vaayu. It is mainly a Kaphaj disorder caused by over consumption of Madhur rasa (Sweet) and can be treated by consumption of Katu and tikta ras and Lekhaniya drugs. The effective and proven single and compound formulations to control the risk factors like obesity, hyperlipidemia, hypertension, diabetes are available in Ayurveda. Drugs like Sarpagandha Ghan Vati, Ashwagandharishta, Jatamansi etc Certain drugs like Lashun, trifala, etc. have their role in lowering cholesterol and LDL levels. All so the drugs like Guggulu, Prabhakar Vati, etc. improve the circulation by cleansing the blood vessels and improving their elasticity. Some ayurvedic rasayna like Hema garbha Pottali Rasayanas have immediate effect of Coronary vaso-dilatation.

Respiratory disorders: The disorders of Respiratory system are mainly related to Shwaas and Hikka (Breathing abnormalities), Kasa (Cough due to various etiologies), Shosh (Pneumonia, Tuberculosis, because of various internal and external causes like infection, over exertion, etc. The main dosha involved in respiratory disorders are Kapha and Vata which cause obstruction in the breathing process. This leads to Pranavaha Srotas Dushti. Thus the principle of treatment for pranavaha srotas isdisease remove any sort of obstruction in airways by treating the cause by means of bio-cleansing (Sodhana) procedures and palliative medical treatment (Shaman chikitsa). Ayurveda also offers Nidana parivarjan meaning avoiding the exposure to etiological factors that is, the dietary and behavioral habits and various atmospheric factors that are considered to be responsible for thepathology of any is the basic principle of treatment for all diseases in Ayurveda Rasayanas like Cyavanaprasha, Drakshavaleha, Brahma Rasayana, Vardhamana Pippali etc. are very effective in strengthening the tissues of respiratory system.

Gastrointestinal and metabolic disorders: Indigestion, Anorexia, Constipation, IBS, Malabsorption syndromes, Gastritis etc. are dealt in the

chapters related to Agnimandya in Ayurveda. Digestion and metabolism are dealt under the heads of Jatharagni and Dhatwagni respectively. So, Diabates mellitus, liver disorders, thyroid malfunctions and even atherosclerosis are the disorders related to agnimandya according to Ayurveda. Various panchakarma procedures for bio-cleansing the GIT and subtle cellular channels are of utmost importance along with the drugs improving secretion of digestive enzymes, intestinal movement and absorption process, in treating the disorders.

Diabetes mellitus (Madhumeha)- According to Ayurveda, Madhumeha is the disease that cannot be cured completely. It should be managed throughout the life by means of avoidance of sedentary life style, proper diet and medicines, if necessary. Medicines like Nisha amalaki Curna, Katakakhadiradi Kwatha, Chandraprabha Vati, Trivanga Bhasma, Phalatrikadi Kwatha, Shilajatu.

Preventive and Curative Measures for Geriatrics : Acharya Charak says the disease before its commencement or at an early stage, experiences long-lasting happiness". Geriatric problems are best confronted by preventive measures than curative ones. Therefore geriatrics has to be treated much before the commencement of old age. The ideal time for treating the old age problems is youth. Discipline in young age prevents geriatric problems. By adopting a healthier lifestyle, the risk of a whole range of diseases can be reduced. These factors are diet and nutrition, exercise, weight, smoking and alcohol, social activities.

Concept of Rasayana : Rasayana has broad meaning indicating qualitative and quantitative improvement of dhatu (tissues).Vayasthapana are specialized rasayana drugs that reverse degenerative changes, increase life span with quality health. The main utility of Rasayana therapy is in functional and degenerative disorders that have a chronic or long standing nature. In such cases, in fact, rasayana is the only solution from the point of view of effective management in any system of medicine. Rasayana becomes more fruitful and effective, if it is preceded with suitable Panchakarma (purificatory therapy). The reason we see mixed results in many cases where Rasayana is employed is because of the fact that, either this purification is not done or improperly

done. Some evidence based research- • Butea monosperma root distillate in the management of age related immature cataract • Guduchi (Tinospora cordifolia) as immunomodulatory agent • Sallaki (Boswelia serrata) in Rheumatoid Arthritis intolerance with anti-inflammatory medication. • Guggulu (Commiphora wightii) in hyperlipidemia • Ashwagandha (Withania somnifera) on the process of aging: Root powder of Ashwagandha (Withania somnifera) was administered in significant increase in haemoglobin, RBC count, hair melanin and decrease in serum cholesterol.

Exercise/ yoga : Exercise helps to control weight, improve emotional well-being and relives stress, improve blood circulation, flexibility. Regular yogic exercise from youth limits the effects of old age.

Benefits of the geriatric yoga: •Yoga provides a good balance, blood stream and tissue liveliness.Yoga has found a place as an alternative medicine approach within geriatric and rehabilitation. Asanas: Surya Namaskar, Pavanamuktasana, Ardha Matsyendrasana, Bhujangasana and Shavasana. Pranayama: Nadisodhana, Kapalbhati, Bhramari Neti, Bhastrika and Tratak. Mudras: Khechari mudra removes diseases and old age problems. Dharana, Dhyana, Swadhyaya and Iswara Pranidhana.

Conclusion-

Ayurveda comprises of a specialized branch that deals with ageing and has a rich source of drugs, formulations and various principles for anti ageing. Rasayan chikitsa literally means the science that deals with anti ageing, longevity of life span, improving physical strength, cognition and memory i.e., improving the functions of brain and body as well as treating various diseases in old age.

Besides Rasayana, Ayurveda can also play a major role in managing the long term debilitating disorders. More the elderly are independent; more improvement in their quality of life is seen. So, to improve the quality of life of the elderly, holistic approach in making them active and healthy is necessary. For this Ayurveda with all its medicines and principles related to lifestyle, food and psychological well being can be applied to benefit the senior citizens in Indian society.

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CONTROLLING MEASURES FOR GERIATRIC DISEASE: A SYSTEMATIC REVIEW

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Abstract:- The prevalence of illness increases as age increases, at the same time, life expectancy decreases. Ayurveda, has the potential for prevention of diseases by health promotion and management of diseases occurring in all age group. In this article discuss about the lifestyle recommendations such as Shodhan chikista, exercise, Yoga, Rasayana therapy and good nutrition for controlling the aging. Jarachikitsa or Rasayana is a unique therapeutic concept of Ayurveda to delay ageing process and to minimize the intensity of diseases occurring in this degenerative phase of life. With all this therapeutic methodology future aging can be reduced before the occurrence of old age. The ideal time for controlling the geriatric problems is young age. Adherence to discipline in youth will keeps the geriatric problems away. By adopting a healthier lifestyle (Rutucharya, Dinacharya in Ayurveda) the risk of chronic disease can be reduced. The Government of India has launched various national camp to popularize the strength of Ayurveda and Yoga in geriatric health care. It is the demand of the time to develop specific protocol for geriatric care by combining Rasayana chikista, Shodhaan chikista, proper dietetics, Ayurvedic medicines, lifestyle and Yoga, exercise in timely.

INTRODUCTION:

Ayurveda is not only concerned with cure the body from disease but also maintenance of healthy state of body.[1] Ayu (life) is the union of body, senses, mind and spirit.[2] The Aging (Vriddhawastha) is a state or condition of life of each and every living organism which is not an unavoidable property of life. Every living being is getting older as time passes. In Ayurveda Vriddhawastha is to go through critical classification of 'Vaya vibhajan' given by every Acharyas. Many Acharyas state that Vriddhawastha (ageing and decay) begains from 70 years and above.[3,4] As human grows in age many changes occur in the body such as structure, mental or physical function also phenomenon of Tridosha, Dhatu, Mala are substantially visible. In old age immunity decreases which causes succumbing of many disease like visual problems, locomotor problems, bowel problems, memory loss, fatigue, oral health problem, osteoarthritis, hearing loss, etc. Ayurveda is a huge source of remedies to control the Doshas specially Vata Dosh which more dominant in Vriddhawastha. For controlling geriatric health issue Ayurveda tells unique therapeutic methodology of Jarachikista or Rasayana to delay aging and to minimize the intensity of problem. Also discuss about lifestyle recommendation like Rutucharya, Dincharya Palayan, panachakarma chikistas (Shodhan chikista), Yoga, Pranayam, Exercise, healthy dietetics and Ayurvedic medicine.

REVIEW OF LITRETURE

Vaya Vibhajan According to different Acharyas :

(A) Acharya Charak[5]

i) Balawastha 30 years ii) Madhyamawastha = 30-60 years iii) Jirnawastha = 60-100 years

(B) Acharya Sushruta:[6]

i) Balawastha < 16 years

a) Kshirap (feeding on milk only)< 1 year b) Kshirannad (feeding on milk & food) 1-2 year

c) Annad (feeding on food) = 2-16 years)

ii) Madhyamawastha[7] = 16-70 years iii) Vriddha > 70 years

The following are some very common problem facing by old age people[8]

1. Cardiovascular-hypertension, MI, CCF

2. Respiratory-asthma and bronchitis

3. Musculoskeletal-osteoporosis, osteoarthritis

4. Gastro-intestinal - dyspepsia

Genito-urinary- nocturia, prostate enlargement

Locomotor system - osteoarthritis, rheumatoid arthritis, gout

Endocrinological - diabetes is one of the major endocrinological problem found in old age

Ophthalmic - senile cataract and glaucoma are very common in old people.

Hearing - loss of hearing and hard hearing are the major hearing problems of old age

Nervous-insomnia is commonly found old age problems, Problems of hair - hair loss and baldness, Cancer - Cancer incidence and severity increases with age

Menopausal- in addition to all these, ladies experience menopausal health disorders

Psychological problems - Dementia is often noticed in old people.

Controlling and Curative Measures for Geriatrics Diseases

Acharya Charak says "He, who treats the disease before its commencement or at an early stage, experiences long-lasting happiness".

A) RITUCHARYA PALAN - In Ayurvedic literature the year is divided into six ritus (seasons)-varsha (monsoon), sharada (autumn), hemanta (winter), shishira (late winter), girshma (summer) and vasanta (spring). The effects of these ritus on the three doshas and the suggested lifestyle for

each.by applying ritucharyas principle in routine life we can avoid from many diseases.so it controls ageing.

B) DIET AND NUTRITION - The food taken in proper quantity provides certainly strength, complexion and happy life to the person without disturbing normalcy. [9] Following points may be considered while planning/advising dietary and other life style regimen. The food should be tasty, nutritious, fresh and good in appearance. Too spicy, salty and pungent food should be avoided. It should neither be very hot nor very cold. Liquid intake should be more frequent and in small amount. Heavy food can be prescribed in a limited quantity. Daily intake of vegetable soup and fruit juices.

C) CONCEPT OF RASAYANA (REJUVENATION)

The word rasayana contains two words rasa and ayana. Rasa means the body fluid which is responsible for the nourishment of the entire body. Ayana means to channelize in a proper way. This rasa circulates in the entire body, penetrates into minute channels and nourishes the body. Benefits of Rasayana (Promotive Treatment): One attains longevity, memory, intelligence, freedom from disorders, youthful age, excellence of lustre, complexion and voice, optimum strength of physique and sense organs, successful words, respectability and brilliance. Ageing is an ongoing process that takes places in the human body. So to prevent the old age and to attain healthy long life, rasayana therapy is the best choice.

Rasayanas treatment of different kinds:

Classical methods:[10] 1. Kutipraveshika - Indoor; A special cottage is built on a auspicious ground,in the neighbourhood of holy people and where all conveniences are available. It has three rooms one after another, all-weather worthy. It must be sound.

2. Vatatapika-Open air : This method is outdoor method.

Anti ageing drugs described in Ayurveda are divided into a group i.e Vayasthapak gana (Age stabilizer drugs)-These herbs are listed below.

1. Guduchi- Tinospora cordifolia. 2. Haritiki. Terminalia chebula.

3. Amalki. Emblica officinale. 4. Yukta. Pluchea lanceolata.

5. Shweta. Clitoria ternatea. 6. Jeewanti. Leptadenia reticulata.

7. Atirasa. Asperagus racemosus. 8. Mandookpamni. Centella asiatica.

9. Sthira. Desmodium giganticum. 10. Punarnava. Boerhaavia diffusa.

Among all, Amalaki is considered as best vayasthapana by Acharya Charaka. These drugs may possess agesustaining and health promotive properties. Acharya Charaka has also described Jeevaniya Mahakashaya which contains drugs like Jeevak, Yashtimadhu, jeevanti etc along with Balya Mahakashaya which possess drugs like Ashwagandha, Shatavari, bala etc. Both of these Mahakashayas have health promoting quality and can help in the prevention and management of aging.

D) Exercise and Yoga

Regular exercise helps to control weight, improve emotional well-being and relives stress, improve blood circulation, flexibility youth limits the effects of old age. Yoga provides a good balance, blood stream and tissue liveliness thanks to the enhanced flexibility and core stabilization. If the person regularly attends the Geriatric Yoga programme many problems, which are caused by age, can be prevented. Yoga has found a place as an alternative medicine approach within geriatric and rehabilitation programmes in developed.

CONCLUSION

To live a long and healthy life is every individuals wish. Due to changing lifestyle and thus they are able not to follow the rules of dietetics. This is problems for the elderly in India. The process of ageing was elaborately described in ayurvedic texts. A separate medical discipline called Rasayana Chikista also called Jara Chikista was developed which described a variety of methods to promote healthy longevity. It is the strength of Ayurveda in the context of geriatric care Rasayana is a therapy .Which is excellent rasa which ultimately results in promotion of longevity of old age and diseases so as to enjoy the full span of life. Government of India has also launched many national camp to popularize the strength of Ayurveda and Yoga in geriatric health care. And now a day it is the demand of the time to develop an

effective protocol for geriatric care by combining Rasayana, Panchkarma, Dietetics, Ayurvedic medicines and lifestyle, exercise and Yoga.

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A LITERARY REVIEW ON ROLE OF RASAYANA THERAPY IN GERIATRICS

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Abstract:- The growth of any country or society depends on the number of youth dwelling in that country but according to recent statistical data we soon will have older people more than children and more people at extreme old age than ever before. Geriatrics (Jarachikitsa) is the branch of medicine dealing exclusively with the problems of aging and the diseases of elderly. The term Rasayana (rejuvination) refers to nourishment or nutrition. Rasayana therapy act essentially on nutrition dynamics and rejuvenate the body on both physical and mental levels. The problems of health due to modernization can be solved by increasing resistance against diseases and psychological improvement by implementing Rasayana therapy. Aging (Jara) is one among the Swabhavika Vyadhis. Jara Chikitsa is one among the Astanga of Ayurveda which is specifically dedicated for geriatric care. As per estimation, India currently has around 75 million persons over 65 years. By proper administration of Rasayana therapy as preventive tool one can delay Jara Janita Vyadhis to occur. This paper highlights the role of Rasayana therapy in geriatric care.

Key words: Rasayana, Jara Chikitsa, Nutrition, Geriatrics.

INTRODUCTION-

The World is facing a situation without precedent. We soon will have more of older people than children and more people at extreme old age than ever before. The number of people aged 65 or older is projected to grow from an estimated 524 million in 2010 to nearly 1.5 billion in 2050,[1] with most of the increase in developing countries including India. In today's developing countries chronic non communicable diseases such as heart disease, cancer and diabetes reflects changes in lifestyle and diet, as well as aging.

Ayurveda the science of life deals mainly with all the aspects of life in relation of health and prevention of disease. So for promotion of life and prevention of disease there are certain codes, conducts and therapies have been mentioned and Rasayana therapy is one among them. Rasayana therapy not only works on physical aspect but also on mental aspect. Geriatrics is a branch of modern medical science which aims at promotion of health by preventing, treating diseases and disabilities in older adults. So to fulfil the aims of geriatrics Rasayana therapy is considered to be the main line of treatment as it prevents most of the geriatric diseases.

Geriatrics in Ayurveda

Geriatrics (Jara Chikitsa) is a branch of medicine dealing exclusively with the problems of aging and the diseases of elderly.[2] It is derived from the Greek root "geron" meaning "old man" and "iatros" meaning "healer". Aging is characterised by gradual structural changes that occurs with the passage of time, that are not due to disease. When we look in to Ayurvedic prospective our Acharyas have given prime importance to and considered it one among Astanga Ayurveda.[3] Vridhavastha or old age is one who has already attained Vriddhi. Acharya Charaka has considered age above 60 years to be Vridhavastha but Acharya Sushurta and Vagbhata considered it as age more than 70 years which is characterised by diminution of tissues, sense faculties, strength, vitality and diminution in enthusiasm day after day(Hani), person develops wrinkles, grey hairs, baldness, occurrence of secondary disorders such as cough, dyspnoea, inability to perform all activities. As per Acharya Vagbhata, Vata Dosha is predominant in old age and it is also considered as Hani Avastha. So there will be more of catabolic activities taking place in

body which further leads to many of the chronic diseases dementia, parkinsonism, hypertension and cerebrovascular diseases etc. By following proper Swasthavritta principles such as Dincharya, Ritucharya, not supressing Dharniya Vegas and following of Rasayana one can preserve his health and delay the aging related problems.

Rasayana Therapy

The word Rasayana derived from root "Rasa" and "Aayana". Rasa has several meaning such as Rasa Dhatu, Aahara Rasa, Shadrasa etc. But in this context it can be taken as Rasa Dhatu itself and word Aayana means 'to move' so it means Rasayana is a dynamic process which nourishes the body from properly formed Dhatus and increases the vital process and prevents the degenerative process. As per Acharya Dalhana, Rasayana is one which leads to continous nourishment of Rasadi Dhatus there by replenishing them.[4] Acharya Sushruta defined Rasayana as Vayasthapaka which retards aging process (increases longevity of life)[5] .As per Acharya Sharangdhar Rasayana can be defined as the one which cures diseases arising due to old age.[6] Acharya Charaka has given prime importance to Rasayana and described it in an elaborate fashion, the properties of Rasayana which Acharya Charaka has mentioned are Rasayana is one which increases longevity, which increases Smriti, Medha, and one which helps in maintaining health (Arogya), maintains youthfulness, which enhances Prabha, Varna, etc.[7]

Classification of Rasayana

Rasayana is Primarly divided into two types:-

a) Dravyabhuta Rasayana

b) Adravyabhutas Rasayana (Achara Rasayana)

(I) As per method of use [8]

a) Kuti Praveshika (in door use)

b) Vatatapika (out door use)

(III) According to Prabhava (Effect)

Dalhana mentions two types of Rasayana in Sarvopaghata Shamaniya chapter of Chikitsasthana,

a) Samshodhana Rasayana

b) Samshamana Rasayana.

Mode of Action

As per our classics Rasayana therapy works on Agni inturn leads to proper formation of Rasadi Dhatus, Hence responsible for creation of Ojas which is considered as prime essence of these Rasadi Dhatus.[9] Which is responsible for proper working of immune system of body in terms of Vyadhi Kshamatva, Hence Rasayana plays a crucial role inprevention of aging and old age related disorders. It also enhances bodily strength and mental faculties. Different classics of Ayurveda have defined Rasayana in different words but in same central theme. The probable mode of action of Rasayana therapy as per contemporary science is as follows,

1. Antioxidant action – Amalaki.

2. Immunomodulatory action – Guduchi.

3. Haematopoietic effect –Amalaki, Bhringaraja Mandura, Lauha Bhasma.

4. Adaptogenic action- Ashwagandha.

5. Antiaging action – Ashwagandha, Bala.

6. Anabolic action –Vidarikanda.

7. Nutritive function –Gritha, Ksheera.

8. Neuroprotective action – Ashwagandha, Swarna Bhasma, Rajata Bhasma.

DISCUSSION

Ayurveda gives importance for geriatric care, as it is one among the branch of Astanga of Ayurveda. Jara Chikitsa has a good scope in present day scenario as a preventive tool. As mentioned earlier the qualities of Rasayana therapy are one which enhances the Smiriti, Medha which maintains Aarogya and

also maintains youthfulness etc. In order to counter act the Jara Lakshana and Jarajanita vyadhis one has to follow Rasayana therapy on daily basis which inturn leads to good qualitative life.

CONCLUSION

As the prime aim of Ayurveda is Swasthasya Swasthya Rakshnam (maintaining the health of a healthy individual). So to maintain the healthy state of a person one should follow the Swasthavritta principles. Rasayana therapy is one among them, in present world persons follow sedentary life style and faulty food habits which is the main cause for metabolic imbalance which leads to aging to start early than its schedule. These Rasayana therapies are critically analysed by our Acharyas. Therefore persons desirous of attaining long life, vitality and happiness should practise Rasayana therapy with complete devotion according to the prescribed procedure.

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STRUCTURAL CHANGES IN KNEE JOINT WITH RESPECT TO AGING

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Abstract:- Structural changes in articular cartilage of various joint seen due to wear and tear. The most common cause of chronic disability in older adults is osteoarthritis. “wear and tear” predisposes articular joints to degenerative process. Inflammatory component in osteoarthritis is the production of matrix degrading enzymes. The wear and tear changes in the musculoskeletal system contribute to the development of osteoarthritis by making the joint more susceptible to the effects of other OA risk factors that include abnormal biomechanics, joint injury, genetics, and obesity. Age-related sarcopenia and increased bone turnover may also contribute to the development of OA. Understanding the basic mechanisms by which aging affects joint tissues should provide new targets for slowing or preventing the development of OA.

Keywords:- Structural anatomy of knee joint, Aging, Articular cartilage, Wear and tear, Osteoarthrits, Risk factors.

Introduction

The relationship between aging and OA is well known but the mechanisms for how aging predisposes the joint to developing OA are still not fully understood. Changes both intrinsic to the joint as well as those extrinsic (such as sarcopenia, altered bone remodeling and reduced proprioception) contribute to the development of OA. The concept that aging contributes to, but does not directly cause OA, is consistent with the multifactorial nature of

this condition and the disparity in which joints are most commonly affected. In this chapter, current concepts of the biology of OA will be reviewed and the relationship between aging and the development of OA will be considered.

The prevalence of osteoarthritis (OA) increases with age such that 30 to 50% of adults over the age of 65 years suffer from this condition1, 2. Radiographic changes of OA, in particular the presence of osteophytes, are even more common such that radiographic surveys of multiple joints (hands, spine, hips and knees) reveal OA in at least one joint in over 80% of older adults3. However, only about half of people with radiographic OA experience significant symptoms. Likewise, not all older adults with symptoms of joint pain have radiographic evidence OA in the painful joint. In a study of 480 adults over the age of 65 years who reported chronic knee pain, only about 50% had radiographic evidence of knee OA4.

The Pathobiology of Osteoarthritis

OA is a multifactorial condition but the pathological changes seen in osteoarthritic joints have common features . In some individuals, increased subchondral bone remodeling results in bone marrow lesions detected on MRI and, in many older adults, calcification in the articular cartilage and/or the menisci is seen on plain radiographs. In the articular cartilage, the earliest changes at the joint surface occur in the areas that receive the greatest mechanical forces. As OA progresses, the loss of the articular cartilage affects joint movement due to the loss of a smooth lubricated surface responsible for the normal gliding motion of the joint. The pathological changes noted in the other joint tissues also contribute to the loss of normal joint function and, because unlike the cartilage they contain pain fibers, these tissues are responsible for the pain experienced by people with OA.

Older theories of OA suggested that the increased subchondral bone resulted in increased stiffness that contributed to the degradation of the overlying cartilage by increasing local stresses. 5,6 However, later studies found that the subchondral bone in OA was poorly mineralized and perhaps less stiff than normal bone5-7. More recently, studies have focused on inflammatory mediators produced by subchondral bone cells that could diffuse through the

calcified cartilage zone or enter through cracks in the calcified cartilage and negatively affect the overlying articular cartilage7. The presence of localized areas of increased bone remodeling detected by bone scans or by MRI has been noted in areas of cartilage loss and is associated with pain in OA8.

Risk Factors for Development of OA :

In terms of knee OA, recent MRI studies have revealed the important role of the meniscus. Incidental meniscal damage on MRI is quite common in the elderly, ranging from a prevalence of 19% in women aged 50-59 to 56% in men in the 70-90 year-old age group (9).

Besides age, the common risk factors for OA include obesity, previous joint injury, genetics, and anatomical factors including joint shape and alignment29. Additional factors include gender, race, and nutritional factors, such as vitamin D deficiency(10, 11). These risk factors appear to interact with age to determine which joints are affected by OA and how severe the condition will be.

Finally, calcification and crystal formation within joint tissues are common findings in older adults that may play a role in OA progression. The association between calcium pyrophosphate deposition disease (CPPD) and the presence of radiographic osteoarthritis has been well established (12,13); however, the role of calcium crystals in the progression of OA has been debated. Some believe that OA and CPPD are common but separate age-related conditions and others believe that the two are closely connected (12,13,14). Since OA and calcium pyrophosphate are equally associated with osteophyte formation, it has been suggested that mechanical stress may induce release of chemokines which encourage both proliferative bone changes and calcium pyrophosphate formation (15,16). Crystals within the articular cartilage or in the synovium could stimulate toll-like receptors on chondrocytes and synovial cells resulting in production of inflammatory mediators (17). Crystals may play a role in erosive OA, a more destructive form of OA seen most commonly in the distal digits of the hands in elderly women in which inflammation is a prominent component (18)

The Role of Age-related Oxidative Stress and Oxidative Damage in OA :

The theory that aging changes in tissues are the result of oxidative damage from the chronic production of endogenous reactive oxygen species (ROS) or “free radicals” was proposed in the 1950's (19) and is still relevant to aging in joint tissues such as the articular cartilage.

Human articular chondrocytes actively produce several different forms of ROS including superoxide, hydroxyl radical, hydrogen peroxide, as well as reactive nitrogen species, mostnotably nitric oxide (20,21). Increased levels of intracellular ROS were recently detected incartilage from old when compared to young adult rats (22). Normally the levels of ROS are controlled by the balance of ROS production and the presence of various anti-oxidants.

Glutathione is an important intracellular anti-oxidant and when levels of ROS are in excess the ratio of oxidized to reduced glutathione is changed. Previous studies have detected an increase in oxidized glutathione with age in chondrocytes isolated from normal ankle tissue (24). There is also evidence that levels of anti-oxidant enzymes, including catalase and superoxide dismutase, are present at lower levels with aging (23,25) and in OA cartilage (26).

An aging-related increase in ROS levels could play an important role in the development of OA (27). The various inflammatory mediators found to be increased in OA, including IL-1, IL-6, IL-8, TNF-α, and other cytokines can all stimulate the further production of ROS and ROS in turn can be involved in the increased production of MMPs (28). In support of a role for ROS in the development of OA, the use of several anti-oxidant vitamins along with selenium (a glutathione peroxidase co-factor) was shown to reduce the development of OA in a mouse model (29), N-acetylcysteine (NAC) reduced cartilage destruction and chondrocyte apoptosis in a rat OA model111 and in impact-loaded osteochondral explants (30) and low intake of anti-oxidant vitamins has been associated with OA progression in humans (31). But we still have much to learn about ROS and oxidative stress in aging and OA in order to define more specific targets. In human clinical trials of chronic age-related diseases, the use of general anti-oxidants or anti-oxidant vitamins has had modest or no benefit. Defining the specific mechanisms by which ROS

act, including their role in the regulation of cell signaling, should provide novel and more specific targets for therapies that would represent an advance over non-directed treatment with general anti- oxidants.

Conclusion :

In summary, age is a primary risk factor for the development of OA, likely due to aging changes in cells and tissues that make the joint more susceptible to damage and less able to maintain homeostasis. OA is characterized by an imbalance between catabolic and anabolic activity driven by local production of inflammatory mediators in the cartilage and surrounding joint tissues. The senescent secretory phenotype likely contributes to this imbalance through the increased production of cytokines and MMPs and a reduced response to growth factors. More information is needed to better understand how aging changes in the bone, meniscus, and ligaments contribute to the development of OA. Oxidative stress appears to play an important role in the link between aging and OA. Understanding the basic mechanisms by which excessive ROS affect cell function at the molecular level may provide the knowledge needed to develop novel preventative treatments for OA.

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