

CONCEPT OF JARA (AGEING) AND ITS MANAGEMENT IN AYURVEDA

Vandana Gupta¹, Bipin Bihari Keshari², Narasimha Murthy KHHVSS³

1. Ph. D. Scholar, Dept. of Kayachikitsa, Faculty of Ayurveda, I. M. S., Banaras Hindu university, Varanasi, Uttar Pradesh, India.
2. Ph. D., Scholar, Dept. of Samhita & Sanskrit, Faculty of Ayurveda, I. M. S., Banaras Hindu university, Varanasi, Uttar Pradesh, India.
3. Assistant Professor, Dept. of Kayachikitsa, Faculty of Ayurveda, I. M. S., Banaras Hindu university, Varanasi, Uttar Pradesh, India.

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Abstract

The increasing number of the aged (≥ 60 years) in the present scenario signifies a new outlook for our reflection. Populations worldwide are ageing. Improvements in environmental (e.g. clean water and improved sanitation), behavioral (nutrition, reduced risk exposures) factors, the treatment and prevention of infectious diseases are largely responsible for the 30-year increase in life expectancy since 1900. Geriatrics is emerging as a main challenging specialty, because of ever growing population of aged people all over the world including India. In present era, medical science deals exclusively with the problem of ageing and the diseases of the elderly. Ayurveda is basically the science of life and longevity. It presents a good concept of ageing, process of delaying the ageing and its management. According to the Ayurveda, ageing is outcome of kalaor parinama and described under 'Svabhavabalapravrittavyadhi', those diseases which produced by the strength of nature such as kshudha (hunger), pipasa (thirst), jara (ageing), mrityu (death), nidra (sleep) etc. Vatadosha the most important factor in the patho-physiology of ageing obviously because of its natural predominance at that stage of life. Ayurveda advocates an excellent approach for promotion of health and prevention of diseases with number of measures like wholesome diet in proper quantity, Dincharya (daily regimen), Ratricharya (night regimen), Ritucharya (seasonal regimen), Sadvrittapan (behavioral and ethical considerations), Achara Rasayana (rejuvenative healthy life-style), Dharaniya and Adharaniyavegas (suppressible and non-suppressible urges), practices of yoga, Rasayana therapy (rejuvenative therapy), time to time Panchkarma and some herbal drugs. The proper practice of these all measures can slow down the process of ageing and cure the diseases of ageing.

Key Words: Jara; Svabhavabalapravrittavyadhi; Rasayana; Panchkarma; Ageing.

***Address for correspondence:**

Dr. Vandana Gupta, Ph. D. Scholar,
Dept. of Kayachikitsa, Faculty of Ayurveda, I. M. S., Banaras Hindu University,
Varanasi, Uttar Pradesh, India – 221 005.
E-mail: guptanvaya@gmail.com

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INTRODUCTION

Ayurveda, the science of life is Anadiand Jara-chikitsabeing an integral part of Ashtanga-Ayurveda is also Anadiin nature. On historical point of view it has been considered that old age and diseases related to it seems to be as old as recorded Ayurveda itself. In aged vatadosha physiologically in a dominant state and rasadi dhatusare in a deficient state.^[1] This potent combination is responsible for the various degenerative changes and process of decay in the body. In present scenario due to improper dietary habits, defective life style, excessive stress and lack of exercise, the process of ageing starts very earlier. These factors produce various degenerative changes as well as metabolic disorders in our body. 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 success. On the other hand, the Ayurveda incorporates various techniques for promotion of health and prevention of diseases in old age. So there is a need to generate awareness among the mass about the end result of population ageing (the increase in the number and proportion of older people in society) and about the potentials of Ayurveda in geriatric health care.

Concept of Ageing

Vaya (age) can be defined as the duration of time since birth to the present for a living individual. According to Acharya Charaka, age has been divided in three part i.e. balyavastha (young age), madhyamavastha (middle age) and jirnavastha (old age). After sixty years of age one is called 'old'. In old age there is progressive diminution of dhatu,

strength of sense organs, vigour, masculinity, and bravery, power of understanding, retaining and memorizing, speech and analyzing facts. There is gradual diminution in the qualities of dhatu also.^[2]

Acharya Sushruta has described that after seventy years of age one is called as old in whom the dhatus, sensory and motor organs, strength, vigour and enthusiasm decline gradually, he gets wrinkles in the skin, grey hairs and baldness and other complaints, is incapable of doing anything, and is like a worn out house in the rain.^[3]

Vagbhata again mentioned the gradual decline in the dhatu and the function of the sense and motor organs in old age. There is description of additional features such as aged persons suffers from kasa (cough), shvasa (dyspnea), valita (wrinkle), khalitya (alopecia), agnisada, slathasaramansandhyasthita (looseness of muscles, joints and bone), twakapaurushya (skin becomes rough), avanama (body bends forward), vepathu (tremors), etc.^[4]

So the vridhnavastha or jirnavastha is the last phase of life and is represented by the decay or degeneration of the body. Acharya Sushruta has mentioned 'Jara' (ageing) under 'Svabhava balapravritta vyadhi' which is of two type. Viz. Kalaja (parirakshanakrita), appearing at proper time even after proper protection and Akalaja (aparirakshanakrita), appearing before proper time due to improper care and prevention.^[5]

Ageing is the progressive, universal decline first in functional reserve and then in function that occurs in organisms over time.^[6] 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, in old age. The biochemical composition of tissues changes with age, physiologic capacity decreases, the ability to maintain homeostasis in adapting to stressors

decline, and vulnerability to disease processes increases with age. After maturation, mortality rate increases exponentially with age. The process of ageing is cellular in nature.

Sequential loss in ageing

From birth to death the moment of conception, right into the extreme old age, the human body undergoes considerable changes in shape, size and composition. The Sharangadhara Samhita^[7] and Ashtanga sangraha,^[8] describes the sequential bio-loss occurring during different decades of life due to process of ageing. Declining of these bio-losses at various decades of life areas are mentioned in Table 1.

These descriptions are applicable even in present time if the chronology is corrected with life-span of man. The effect of ageing is more obvious in the 5th decades of life when the properties of the skin elude. The ageing process enhances in relation to age and affects one by one the function of vital tissues and organ like drishti, shukra, buddhi, motor organ, mind and other sense organs.

Etiology of Jara

Jara, the old age is an unavoidable phase of life which ultimately ends into death. The etiology of jara is not clearly mentioned in Ayurveda however some point can be considered in its regard which is as follow:

(A) Swabhavoparamavada (Theory of natural destruction)

Charaka has explained in his theory of Swabhavoparamavada that “there is a causative factor for the manifestation of beings but no causative factor as such exists for their deterioration.^[9] That means the process of deterioration occurs naturally. Thus Swabhava can be considered as a responsible factor in the causation of Jara (ageing) which

is deteriorating, invisible and nature’s unique process.

(B) Kala(Time factor)

Modification is the characteristic features of time. All the things in the universe undergo various changes before it is destroyed completely. In Ayurveda, this sequence of change is known as “Parinama” which take place under the influence of ‘Kala’. Thus it can be concluded that parinama brings the jara, is the sequential events of balyavastha, yuvasvastha, jaravsatha etc. are all the consequences of kala. Jara is a phase of life that occurs by the effect of time “Kalasyaparinamena Jaramrityunimittajaha”.^[10]

(C) Shareera Vriddhikarabhava – abhava (Depletion of growth factor)

Charaka has also given some other factors, which may be considered as promotive of growth. These factors are Kala yoga (time bounded phenomenon), Swabhavasamsiddhi (Natural phenomenon as result of invisible process which is responsible for growth), Aharasaushthava (dietary factor which is according to ashta-aharavidhivisheshayatan, aharaividhividhana, dwadashasanapravicharana) and Avighata (absence of devastating causes).^[11] The lack of above mentioned factors may decrease the growth of an individual. So absence of these favorable condition for growth, may lead to ageing process.

(D) Role of Tridosha in ageing

In Ayurveda, the phenomenon of ageing is also related to principle of Tridosha. The tridosha (vata, pitta and kapha) is the most important factor in maintenance of good health and production of disease. These doshas exists in the body all the time but it varies as per age, day or night period and after taking meals.

Table 1: Bio-losses at various decades

Decade of life	Loss mentioned	
	Sharangadhara Samhita	Ashtanga Samgraha
1 st	Balyam (Childhood)	Balyam (Childhood)
2 nd	Vridhhi (Growth)	Vridhhi (Growth)
3 rd	Chavi (Complexion)	Prabha(lusture)
4 th	Medha (intellect)	Medha (intellect)
5 th	Twaka (Skin)	Twaka (Skin)
6 th	Drishti(Vision)	Shukra(Virility)
7 th	Shukra(Virility)	Drishti(Vision)
8 th	Vikram (Strength)	Shrotendriya(Hearing)
9 th	Buddhi (intellect)	Mana(Spirituality)
10 th	Karmendriya (Function of all the Indriyas)	Sarvendriya(all the indriyas)

During childhood kapha dosha predominates, in the middle age pitta dosha and in the older age vata dosha is said to be dominant. The properties of vata dosha are described as ruksha, laghu, sheeta, kharaand vishada. So Vata dosha by nature, decreases luster of skin, lessens body strength, dries and decays the body and hastens ageing process. Thus the process of ageing can be evaluated in terms of the tridoshika physiology.

(E) Role of Agni in ageing

Apart from doshas, Agni also plays an important part in ageing process. Body tissues are regularly nourished by dietary substances and agni is said to be responsible for the conversion of dietary substances into tissue elements. In old age, more vitiation of vata dosha occurs which is responsible for vishamagni which affects the digestion and creating under nourishment of the tissues. This under nourishment of the tissues may have an impact on low status of dhatwagni which creates diseases in elder people. Thus ageing effects are more closely related to agni having vishamagni.

(F) Role of Dhatus in ageing

Though the classical text do not explain the exact role of dhatu in ageing process but it is clearly mentioned in classics that during old age quantity as well as quality of dhatu is decreased.

Oja (the essence of all the dhatu) is also termed as Bala which is responsible for resistance against diseases or vyadhikshamatva (immunity) is also decreased. So the dhatu kshaya and oja kshaya are also responsible for process of ageing and diseases in old age.

(G) Role of Srotas in ageing

Charaka has described that various pathological conditions arise in the body due to srotodusti of differentsrotasa. The main function of srotasa (channels of body) is to transfer the body fluids. In Srotodushti there are four pathological conditions that takes place i.e. Atipravritti, sanga, siragranthi and vimargagama. The main cause for sroto dushti is vitiation of vayu and mandagni which are prominent in aged.

Causes of Akalaj-jara (Premature ageing)

Jara is of two types viz. Kalaja-jara (natural ageing) and Akalaja-jara (premature ageing). The etiological factors for initiating the early ageing process according to Ayurveda are clearly described by Charaka and Vagbhata. All the etiological factors for ageing can be differentiated in three categories.^{[12][13]}

Aharatmaka Hetu

- Amla, katu, lavana rasa, kshara, guru, ruksha, klinna (softened), abhishyandi

(those which obstruct the channels of circulation), puti (putrid), paryushita (stale) food articles accelerates the process of ageing.

- Navashukadhanya (newly harvested class of corns), navashamidhanya (newly harvested class of pulses), shuskamansa (dried meat), tila (sesamum), palal (paste of sesame), pishtanna (preparations of rice flour with water) etc. Produces ama by decreasing agni and leads to ageing process.
- Different type of viruddhaahara (incompatible diet) i.e. rasa viruddha, guna viruddha, virya viruddha etc. are also responsible for initiation of ageing process.
- Asatmya ahara (unwholesome diet), Vishamashana, Adhyasana etc. leads to agnidushti and senility.

Viharatmaka hetu

Viharatmaka hetu of jara comprise divaswapna (day sleep), ativyavaya (excessive indulgence in sexual act), ayasa (excessive exercise) and vishama-atimatra vyayama etc.

Manasika hetu

Bhaya, krodha, shoka, lobha, moha etc. are the factor responsible for the senility.

Madhava Nidana^[14] and Rasa RatnaSammuchchaya^[15] has mentioned that excessive walking, intake of very cold substance and kadanna (food articles which are devoid of Jeevaniya properties), sexual indulgence and mental worries are the cause of jara.

Ageing theories

Ageing is defined as a progressive breakdown of homeostatic adaptive responses of the body. The consequences of ageing appear after reproductive age. However, ageing is distinct

from mortality and disease, although aged individual are more vulnerable to disease.^[16] With age various structural and functional changes occur in different organs and systems of the human body i.e. atherosclerosis, arteriosclerosis with calcification, loss of elastic tissue from aorta and major arterial trunks, atrophy of gyri and sulci, Alzheimer's disease, Parkinson's disease, degenerative bone diseases, deterioration of vision, disability in hearing, incontinence of urine, laxity of skin, cancer etc. The numbers of theories and observations have been projected to identify probable cause of ageing, but no definitive biologic basis of ageing is established. The following are some most acceptable hypotheses of ageing based on experimental ageing study.

Cellular senescence

By studies of tissue culture *in vitro*, it has been observed that fibroblast in culture can only undergo a limited number of cell division and then the culture dies out. It means that there is reduced functional capacity to proliferate with age. It has been observed that with every cell division there is progressive shortening of telomere present at the tips of chromosomes which in normal cell is repaired by the presence of RNA enzyme, telomerase. Due to ageing and inadequate presence of telomerase enzyme, lost telomere is not repaired and cells stop dividing. Patients with the premature ageing, Werner's syndrome' represents damaged DNA and particularly shortened telomere.

Oxidative stress

This occurs when the production of reactive oxygen species (free radicals) exceeds available antioxidant in body. Interaction of these free radicals with DNA in mitochondria and nucleus leads to mutation and deletion.^[17] A common deletion in mitochondrial DNA with age compromises function and alters cell metabolic processes and adaptability to

environmental change. This process continues until oxidative phosphorylation is compromised, adenosine triphosphate (ATP) production declines and cells begin to die. The role of antioxidant in retarding the oxidative damage has been reported in some studies.

Protein modification by glycation

Advanced glycosylation end-products (AGE) are produced by spontaneous reaction between protein and sugar molecules. This process is increased by oxidative stress. These advanced glycosylation end-products (AGE) are responsible for damage of the structure and function of the affected protein. This is the cause of thickening of vascular basement membrane, yellowing of nails and cornea in aged.^[17]

Defective host defenses

The failure of the immune system to respond to infectious agents and the over activity of natural immunity create vulnerability to environmental stresses.

Hormonal changes

The decline and loss of circadian rhythm in secretion of some hormones produces a functional hormone deficiency state.

Genetic control theory

Ageing is a genetic program activated in post-reproductive life when an individual's evolutionary mission is accomplished.

Ayurvedic management of elderly people

Ayurveda advocates wonderful approach to delay Kala-jara (natural ageing) and to avoid Akala-jara (premature ageing). Ayurveda gives primary importance to preventive and promotive health care and the maintenance of positive health. The major preventive approaches for maintaining and improving the

quality of life include individualized specific measures like Dinacharya, Ratricharya, Ritucharya, Hitakara and Matravata ahara, Sadvritta-palana, Achara rasayana etc. These measures can retard the process of ageing. Furthermore, Rasayana therapy, practices of yoga, time to time panchakarma and various herbal drugs are very effective methods for geriatric health care in present time.

Rasayana therapy

Rasayana word is made up of two words 'Rasa' means 'nutrition' and 'Ayana' means circulation or promotion. Ayurvedic system of medicines specially incorporates Rasayana Tantra as one of the eight disciplines of Astanga Ayurveda, which is exclusively devoted to geriatric health care. Essentially Rasayana therapy has a very broad scope and it does not mean only rejuvenation or method for delayed ageing. Rasayana is specialized procedure practiced in the form of rejuvenative measures, dietary regimen and health promoting methods.^[18] Rasayana therapy aims ultimately at the attainment of most excellent rasadi dhatu. The classical texts of Ayurveda describes that a person undergoing Rasayana therapy attains longevity, improved memory, intelligence, freedom from diseases, youth, excellence of luster, complexion and voice, optimum strength of physique and senses, command over language, respectability and brilliance. Rasayana drugs act primarily at the level of Rasa dhatu (promoting nutrient value of plasma), Agni (improved digestion and metabolism) and Srotas (cleaning up the micro channels leading to better perfusion of tissue).

Classification of Rasayana

On the basis of the utility

- **Kamyra Rasayana:** which is used in healthy persons for further promotion of health. It is again of three subtypes:
 - (i) Pranakamyra to promote longevity.

- (ii) Srikamya to promote body lusture.
- (iii) Medhakamya to promote mental competence

- **Naimittika Rasayana:** which is used specifically in the treatment of specific diseases viz. Silajatu (*Asphaltum punjabinum*) in prameha, Tuvarak (*Hydnocarpus laurifolia*) in kushtha, Shalaparni (*Desmodium gangeticum*) and Arjuna (*Terminalia arjuna*) in hridrog, medhya rasayana in manas roga etc.
- **Ajasrika Rasayana:** which is used as a part of diet as milk, ghrita (ghee), madhu (honey) etc.

Based on method of use

- Vatatapika Rasayana i.e. outdoor regimen.
- Kutipravesika Rasayana i.e. intensive indoor regimen.

Special Rasayana drugs

- Medhya Rasayana- in Psychiatric disorders. Medhya rasayanas viz., Juice of Mandukaparni (*Centella asiatica*) and Guduchi (*Tinospora cordifolia*), powder of Yastimadhu (*Glycyrrhiza glabra*) with milk and paste of Sankhapushpi (*Convolvulus pluricaulis*) are intellect promoters. These drugs have quality of enhancing memory, intelligence and strength of body, mind and sense organs.
- Achara Rasayana – Rejuvenative conduct and life style.

Practices of Yoga

Some of the psychophysical practices of Yoga including some Asanas (body postures), Pranayama (breath control) and meditation has been proven very effective method for improving health and spiritual wellbeing in the elderly people. A regular practice of yama and niyama will lead to complete refraining from

all the evil courses and tendencies of life. Some relaxation asanas such as Shavasana, Makarasana, yoga nidra etc. helps to relieve the stress and produce autonomic balance thus helping to correct numerous psychosomatic conditions that are prevalent in older age. Pavanamuktasana, Bhujangasana, Shalabhasana, Tadasana etc. are also very useful in the some diseases of old age. Pranayama (such as Anuloma-viloma, Bhramari etc.) helps to control the process of respiration and removes the instability of mind in elderly people. The inner aspects of dharana and dhyana help to normalize the higher functions and modulate the individual perspectives thus cultivating a positive and proper attitude towards life.

Panchakarma therapy for elderly

Panchakarma is a purifactory method comprising of five main procedures that facilitates better bioavailability of the pharmacological therapies, helps to bring about homeostasis of body-humors, cleansing of channels, eliminates the doshas from the body and checks the recurrence and progression of disease. The five-fold measures comprehended in this therapy are Vamana (Emesis), Virechana (Purgation), Asthapana Vasti (Decoction enema), Anuvasana Vasti (oil Enema), Nasya Karma (Nasal administration of medicaments). In geriatric practice, selective Panchakarma therapy avoiding the drastic evacuatory practices like Vamana and strong Virechana should be used. The schedule in the elderly should consist of Snehana (medicated oleation), Swedana (sudation), Pindasweda, Shirobasti, Shirodhara, Yapana basti and Brimhana basti suitably planned for each individual. Similarly the Pindasweda procedure of Keraliya Panchakarma therapy is known for its rehabilitative effect in many neurodegenerative conditions and myopathies.

Herbal remedies for diseases of old age

Some of the most common diseases of old age include arthritis, cataract, diabetes, dementia, depression, asthma, hypertension, cardiovascular disease, cerebro-vascular disease, liver & kidney diseases, cancer etc. Moreover impaired body functions, delayed wound healing and susceptibility to infection are frequently observed in old age. Common medicinal plants used for these ailments are as hereunder—

- Arjuna (*Terminalia arjuna*), Guggulu (*Commiphora mukul*) and Karveera (*Nerium indicum*) as cardioprotective in cases of ischemic heart disease,
- Arjun (*Terminalia arjuna*), Sarpgandha (*Rauwolfia serpentina*), Shankpushpi (*Convolvulus pluricaulis*), Ashwagandha (*Withania somnifera*) and Punarnava (*Boerhavia diffusa*) in hypertension.
- Vijaysar (*Pterocarpus marsupium*), Gudmar (*Gymnema sylvestre*), Jambu (*Syzygium cumini*), Methika (*Trigonella foenum-graecum*), Sadabahar (*Lochnera rosea*), Haridra (*Curcuma longa*) and Karvellaka (*Momordia charantia*) in diabetes.
- Ashwagandha (*Withania somnifera*), Guduchi (*Tinospora cordifolia*), Shunthi (*Zingiber officinale*), Shallaki (*Boswellia serrate*), Rasna (*Pluchea lanceolata*), Lashun (*Allium sativum*), Eranda (*Ricinus communis*), Nirgundi (*Vitex negundo*) and Shuddha Kuchala (*Strychnos nuxvomica*) in arthritis.
- Brahmi (*Bacopa monnieri*), Shankpushpi (*Convolvulus pluricaulis*), Mandukparni (*Centella asiatica*), Guduchi (*Tinospora cordifolia*) and Madhuyasti (*Glycyrrhiza glabra*) in the treatment of senile dementias.
- Varuna (*Crataeva nurvala*), Gokshura (*Tribulus terrestris*) and Shigru (*Moringa oleifera*) in treatment of senile enlargement of Prostate.

- Triphala (*Embllica officinalis*, *Terminalia bellirica* and *Terminalia chebula*), Jyotishmati (*Celastrus panniculatus*) in senile visual disorders.
- Kapikacchu (*Mucuna prurita*) in treatment of Parkinsons disease.
- Amrita (*Tinospora cordifolia*) and Amalaki (*Embllica officinalis*) in immunodeficiency.
- Shirodhara and Shirobasti in headache, insomnia, anxiety etc.

CONCLUSION

Old age is an undesirable and inevitable phase of human life. The life science of Ayurveda explains that, process of senescence begins naturally (swabhavoparamavada) under the influence of time (kala). Though the disturbance in the equilibrium in all the three doshas occurs during old age, there is dominance of vata dosha in this age. Ancient Ayurvedic scholars have clearly mentioned that during old age quantity and quality of all the dhatu decreases. The combination of dominant state of vata dosha and deterioration of rasadidhatu, srotas and agni are responsible for the various degenerative changes and process of decay in the body. Hence geriatric care warrants management of Agni, Ama and Oja (the essence of all Dhatus) at biological level. Rasayana drugs which compensates the age related bio-losses in the body and provide rejuvenating effect, act primarily at the level of Rasa dhatu, Agni and Srotas. Combining rasayana therapy, wholesome diet, dinacharya, ritucharya, sadvritta, yoga and time to time panchkarma are likely to develop an effective package for geriatric care today.

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