



Factors affecting in Aging – An Ayurvedic Review

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Abstract

Aging is a universal process that probably began with origin of life. After birth growth and senility ultimately leading to death are inevitable process. Accumulation of the diverse deleterious changes produced by aging throughout the cells and tissues progressively impairs function and can eventually cause death. In *Ayurveda*, aging is known as *jara* defined as 'jiryati iti jara'. It is the process of becoming old. 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. So here is an attempt to explore the factors affecting in Aging.

Keywords - Aging, Jara, Dosh, Dhatu, Agni, Mala.

Introduction

Aging is both a complex and challenging scientific problem and a fact of

universal concern. Aging represents structural changes of organism over its entire life span these aging process are accompanied by phenotypic changes in extracellular matrix.² In Ayurved *Sushruta* has described the features of a healthy person as, It follows that the *doshas* must be in equilibrium, the digestive fire must be in a balanced state and the tissues and *malas* must work in a normal state. The sensory and motor organs and mind, atma must be also in a pleasant state. Such a person called a healthy or swastha.³ This concept of aging is widely scattered in various texts in the *Ayurvedic* classics. The equivalent term for aging in *ayurveda* literature is *jara*. The *tridosha*, *dhatu*, *mala*, *Agni* all play important role in the maintenance of cellular health and longevity.⁴

Aim and objective

- To study the concept of Aging as per Modern and *Ayurveda*.
- To study the role of different factors like *Dosha*, *Dhatu*, *Dhatu*, *Agni* etc in Aging.

Material and method

Literature related to Aging collected from *Bruhatrayi*, *Laghutaryi* and some modern literatures.

Ayurvedic view of Aging

Ayurveda has considered '*jara*' or *vardhakya* as a natural and inevitable process as well as a *swabhavaj vyadhi*. The term *jara* has been derived from the sanskrit root '*jarish vayohanow*' which can be explained as “*vayahkrta slata mamsadya vastha vishesha*” which means the muscle and other tissue are loosened under the influence of Aging. Totally this term indicates of the loss in the period of life span.⁵

Sequential kshay in Aging

Vagbhat and *sharangdhara* presented an interesting scheme for loss of different biological factors during the lifetime, as a function of aging in different decades.^{6, 7} Mile stones of aging or sequential loss of biological factors of aging.

Decades	year	Vagbhat	Sharangadhar
First	1-10	Balya	Balya
Second	11-20	Vruddhi	Vruddhi
Third	21-30	Prabha	Cabi
Fourth	31-40	Medha	Medha
Fifth	41-50	Twacha	Twacha
Sixth	51-60	Sukra	Drsthi
Seventh	61-70	Drusthi	Shukra
Eighth	71-80	Strotendriya	Shukra
Nineth	81-90	Mana	Buddhi
Tenth	91-100	Sparshendriya	Karmendriya

Classification of vaya

Jara is synonymed as *vardhakya* meaning increasing age. *Charaka* mentioned

vrudhawastha after 60 yrs whereas *Sushruta* mentioned after 70 yrs of age.^{8, 9} According to *chanogyaupanishad* the total life span of 116 yrs and *vrudhawastha* after 48 yrs.

Pathophysiology of Aging

In Aging, *ayurveda* consideration *prana* life energy that performs respiratory, oxygenation and circulation. Aggravated *pran* leads to degenerative disorder in the *dhatu*. It governs two other essence – *Ojas* and *tejas*.

Ojas– the essence of 7 *dhatu* or bodily tissues and is responsible for autoimmune disease. Displaced *Ojas* related with *kapha*, where as Decreased *Ojas* related with *vata* reactions.

Tejas – The essence of a very subtle fire or energy governs metabolism through the enzyme system. *Agni* Promotes digestion, absorption and assimilation of food. *Teja* is necessary for the nourishing and transformation of each *dhatu*. Lack of *tejas* results in over production of unhealthy tissue and obstructs the flow of *pranic* energy. Just as it is essential to maintain balance amongst the *tridosha* – *vata*, *pitta*, *kapha* principles off motion, metabolism structure respectively.¹⁰

Modern view of Aging

Aging in modern science is defined as a progressive failure of the body homeostatic adaptive response. Gerontologist defined it as a process that results in an age related increase of death rate or failure rate. Biologist define Aging as the sum total of all changes that occur in a living organism with the passage of time and lead to decreasing ability to survive stress, functional impairment and death.¹¹ Modern biological theories of Aging in humans fall into two

main categories: programmed and damaged error theories. The programmed theories imply that aging follows a biological timetable, perhaps a continuation of the one that regulates childhood growth and development. This regulation would happen on changes in gene expression that affect the systems responsible for maintenance, repair and defence response. The damage or error theories emphasize environmental assaults to living organisms that influence levels as the cause of aging .¹²

Aging and Tridosha

The three basic constituents of human body *vata*, *pitta* and *kapha* in a balanced state structurally and functionally maintain the health and in an imbalanced state produce disease

Amongst these *dosha*, *kapha* is predominant in *balya*, *pitta* in *madhyam* and *vata* in *vardhakya*. In the old age, many syndromes are observed which are the results of imbalance in the body constituent i.e. *vata*, *pitta*, *kapha* to a lesser or greater extent . The imbalance varies in velocity and intensity depending upon many factors such as life style, *habbits*, age etc.

As per *tridoshas* concerned, *vayu* according to its fundamental properties precipitates involution i.e. *kshayand shosha* of *dhatu*s which is responsible for most of manifestation of aging .As a function of aging with advance age *kapha* gets gradually depleted and *vata* increases spontaneously. The normal function of *panchavidha vata* such as *utsaha*, *uccwasa*, *niswasa*, *chesta* etc are affected or deteriorated in old age.

Vata

Type of vata	Functional part affected	Results in
1. Prana vayu	Aharana, Udgara Niswasa	Difficult in deglutition, <i>increased udgara pravriti due to fermentation of food because of delayed digestion.</i> <i>Swasa on slight exertion, Derranged buddhi, weakness of hrudya, diminished sensory functions.</i>
2. Udana	Vak pravritti Bala, varna, smruti etc	Indistinct or unclear pronunciation <i>Smritinasha, Balakshaya, Vrnayaviparyaya</i>
3. Saman	Annagrahana parinaman Rasa malady vivechan, Munchana etc.	Decreased appetite, less ingestion capacity, weakned digestion reduced separation and elimination may lead to Gulma, MandAgni, Atisara, kampa
4. Vyana	Nimesha, unmesaha, apakeshepan, utkshepan	Palpitation, unsteady gait, vertigo etc. Impaired circulation to the various

		tissues.
5. Apana	Utsarga of shukra, Mootra, purisha, Aartva, Garbha etc.	Constipation, urinary incontenance, scanty menstruation less or delayed seminal discharge etc.

Pitta

Type of pitta	Function affected in old age	Results in
1. Pachaka	Annapachana Kshut Ojas	Loss of appetite, indigestion, Ama formation leading to Amajanya roga, improper formation of rasadi dhatu.
2. Ranjaka	Formation of rakta dhatu	Anemia, skin disorders, diseases in haemopoietic system.
3. Alochaka	Rupa grahan	Myopia, glaucoma, cataract etc.
4. Bhrajaka	Prabha Chaya Dehmardavam	Loss of lusture of skin, wrinkles, loss of elasticity etc.
5. Sadhaka	Buddhi, Medha, Abhiprahita, manorathas, Haras	Smrutinasa, bhaya, krodha, harsa, moha etc .psycosomatic disorders or depression etc.

Kapha

Type of kapha	Function affected in old age	Results in
1. Avalambaka	Trikavalambane, bala, dhruti, Utsaha, Buddhi etc.	Hrddrava, Hrtsula, other cardiovascular disease.
2. Tarpak	Indriya tarpan	Improper functioning of janendriyas and mastiska.
3. Bodhaka	Rasa bodhana	Atrophied taste buds, increased oral cavity malignancies.

4. <i>Sleshaka</i>	<i>Asthisandhi slesanam</i> <i>Sandhisthainjum sthiratwa</i>	<i>Rheumatoid arthritis, Osteoarthritis, Osteoporosis and other loco motor disorders.</i>
5. <i>Kledaka</i>	<i>Anna kledana</i>	<i>Loss of appetite, Gastritis, Peptic ulcer diseases enteritis etc.</i>

Aging and prakriti

Prakriti, an important concept of *Ayurveda*, is a combination of physical, physiological and psychological characteristics. *Prakriti* means overall nature of an individual. According to *Sushruta*, *Prakriti* remains inherited throughout the life. This variation is due to different characteristics of different *Dosha* dominance. *Vata Dosha* has predominance of *Vayu* (air) and *Akasha Mahabhuta* (space elements) which increases dryness of skin. *Vata Dosha* has dryness which causes evaporation of liquid or secretion so that water cannot be retained for longer time, leading to dryness. In *Pitta Prakriti*, *Pitta Dosha* has *Teja Mahabhuta* (fire elements) predominance. *Ruksha* (dry), *Khara* (rough) and *Vishada* are the characteristics of *Teja Mahabhuta*. In *Kapha*

Prakriti, *Kapha Dosha* has predominance of *Jala* and *Prithvi Mahabhuta* (earth element). *Jala Mahabhuta* (water element) has *Drava* (liquid), *Stimit* (wet or moist), *Shita* (cold) and *Snigdha* property. *Jala Mahabhuta* (water element) is responsible to maintain moisture in body, which performs *Snehana Karma* (maintain oiliness) of *Kapha Dosha*. In *Kapha Prakriti*, the rate at which water reaches to *stratum corneum* from body is high and evaporation rate is less. Hence, the ability of *stratum corneum* to hold water is high.¹³

In old age *vara* increases so, *vata prakriti* person are more susceptible to dry skin and thin skin. *pitta prakriti* person are more prone to develop wrinkles *kapha prakriti* person skin which is thick, oily, soft and cool to touch to develop wrinkles much later in life than *vata* and *pitta*.¹⁴

<i>Dhatu</i>	<i>Lakshana</i>	<i>Vikara</i>
1. <i>Rasakshaya</i>	<i>Roukshaya, Bhrama, Sabda sahisnuta</i>	<i>Aruchi, tandra, arasagnata, Angamarda, Pandutwa, Agninas, Valipalit, Krsangata.</i>
2. <i>Raktkshaya</i>	<i>Sirasaithilya, Rukstwa</i>	<i>Skin disease, hypertension, vertigo, decreased lusture etc,</i>
3. <i>Manskshaya</i>	<i>Suskta of Sphik etc</i>	<i>Loss of weight, improper sensory function. Etc.</i>
4. <i>Medokshaya</i>	<i>Sandhi vedana, glani, suskta etc.</i>	<i>Splenomegaly, prameha purvaroop</i>
5. <i>Astikshaya</i>	<i>Astitoda, Danta kesa, Nakha sadanam</i>	<i>Diseases of hair root, nail, diseases of bone .</i>
6. <i>Majjakshaya</i>	<i>Asthisousirya, Bhrama, Sukralpata</i>	<i>Vata vikara, pain in joints, vertigo etc. decreased dehabala</i>
7. <i>Sukrakshaya</i>	<i>Hrasa, Daniya, Cirapracutyi</i>	<i>Anemia, decreased libido etc.</i>

Aging and Dhatu

Dhatus are responsible to maintain a state of equilibrium with the help of *dosha* and *mala*.” *Hriyamana dhatu* is a feature of old age . *Dhatu* usually perform two actions :

1. *Dharana*
2. *Poshana*

In old age, due to *vikritavatav*, *vishamAgni*, *ksheenkapha*, the first *dhatu* i.e. *Rasa* is not formed properly and its function of preening to the rest of the *dhatu* is not performed, resulting in sequential weakening of all *dhatu* i.e. *Dhatukshay*. Hence, due to this malformed *rasa*, it sets off a chain of malformed *updhatus* and *dhatu malas*. The various *ksheena lakshanas* and *vikara* develops. Due to tendency of gradual decline or involution of all *dhatu* i.e. after 60-70 yrs.

Aging and Agni

There are 13 types of *Agni* described in *Ayurveda* which represents the digestive and metabolic fire in the body. It consists of digestive juices, enzymes, hormones etc participating in metabolism . *Aacharya charaka* states that *Agni* is responsible for *ayu*, *varna*, *bala*, *swastha*, *uttsaha*, *prabha*, *Ojas*, *Agni*, *prana* etc based on the *bala*, *Agni* in turn is of 4 types : *TikshAgni*, *samAgni*, *vishamagni* and *mandAgni*. In old age, due to the predominance of *vata dosha* *vishamAgni* prevails leading to *vishamagni janya rogas* such as *ajeerna*, *adhamaan*, *sula*, *udavarta*, *atisara*, *antrakunja*, *pravahan* etc.

In the young adults, due to increases activity of *pitta*, the digestive

capacity will be at its peak . The optimum activity of *Agni* maintains the vigour and vitality with deleterious changes and involution due to defective metabolism.¹⁵ So, in old age, due to *vishamAgni* defective metabolism occurs within the body leading to involuntary changes such as *kshay* and *shosha* .

Aging and Mala

Malas are equally important as that of *dosha* and *dhatu*. They form the *maladravya* of the body . They arise out of *kittapaka* at the *pachakAgni* and *dhatwAgni* levels . The various *malas* mentioned in *Astang hrudya* are *Vata*, *Pitta* and *Kapha*, *Khamla*, *Karnamala*, *Akshimal*, *Asyamala*, *Paryojana*, *Nasikamala*, *Lomokupamala*, *Keshmashruloma* and *Nakha* etc.

These play a vital role in the body dynamics, as elimination of *mala* is an index of the activities. Hampered *Agni* in old age leads to *Malakshay*. The common features such as a pain in chest. *Dysuria* *hematuria*, excessive thirst, dryness of mouth, skin are found in *malakshaya*.

Aging and Indriyas

Indriya is defined as "*Lingamindrasya*" sign of life. *Indriyas* in turn are of three kinds: *Jnanendriya*, *Karmendriya*, *Ubhayendriya*. The *Tridosas* influences the *Indriya* in performing its functions as it has been described in *Charaka* that *Pranavata* does the function of *Sarvendriya yojana* and *Indriya tarpana* is done by *Tarpaka kapha* etc.

Various disorders of *Jnanendriya* are observed in old age such as *Akshihundana*,

Karnanāda, Supti, Kandu, Arasagnata etc.
The functions of *Karmendriyas* are also adversely affected in old age.

The various functions of *satwa (manas)* are also affected in old age. *Manoniyamana, Manapreerana, Harsa, Utsāha, Prayatna, Buddhi, Medha, Abhimana* etc. are the functions of *Manas* affected due to aging.

<i>Indriya</i>	<i>Vayu</i>	<i>Karma</i>
<i>Jivha</i>	<i>Udanvayu</i> <i>Vyan vayu</i>	<i>Vakpravrutti</i> <i>Vakdusti</i>
<i>Hasta</i>	<i>Vyan vayu</i>	<i>Kayachesta</i>
<i>Pada</i>	<i>Vyan vayu</i>	<i>Gati</i>
<i>Payu</i>	<i>Apan vayu</i>	<i>Malasamokca</i>
<i>Upastha</i>	<i>Apan vayu</i>	<i>Shukrotsarga</i>

Aging and *Srotas*

The Ancient *Ācharyas* have stressed the fact that the whole body is composed of *Srotas* which act as a network in connecting the whole body. Transportation of various types of nutrition, waste materials, etc takes place through different channels *Srotas*. *Srotas* may be large, minute, long, cylindrical, etc, as their synonym indicates. There is no structure in the body devoid of *Srotas*. Hence, a structural deformity ensures the deformity within the *srotas* and vice-versa, and hence, due to the *Khavaigunya/Srotovaigunya* the *Dosa-duśya sammorchana* occurs leading to different features manifested by the *Srotoduṣṭi*. *Carakahas* clearly discussed four types of *Pathophysiological* conditions of *Srotas* in terms of *Atipravṛtti, Sanga, Vimarga gamana* and *Siragranthi*.

<i>Sr. No</i>	<i>Srotas</i>	<i>Lakshana</i>
1	<i>Rasvaha / pranvaha</i>	<i>Dyspnea, chest pain, vertigo. Swasa, Kāsa, R.T.I. Diabetes, HTN etc</i>
2	<i>Annavaha</i>	<i>Agnimāndya, Aruci. Adhmana, Avipāka, Cardi.</i>
3	<i>Udakvaha</i>	<i>Jihwa, tālu, kanta sosa etc.</i>
4	<i>Rasaraktavaha</i>	<i>Panduta, Dourbhalya, Dāha.</i>
5	<i>Mansavaha</i>	<i>Emaciation, loosening of muscle, wrinkled skin. loss of elasticity etc.</i>
6	<i>Medavaha</i>	<i>Taluśoṣa, Pipāsa, deranged cholesterol and lipid metabolism, arterioscleroses, nephropathy, HTN.</i>
7	<i>Asthivaha</i>	<i>Osteoporosis, osteo arthritis, gout, Polyarthrititis, Rheumatoid arthritis.</i>
8	<i>Majjavaha</i>	<i>Joint pain, Bhrama, darkness before eyes etc.</i>
9	<i>Sukravaha</i>	<i>Klibata, Cirata, Sukra praśeka.</i>
10	<i>Mutravaha</i>	<i>Polyuria, dribbling of urine, dysuria, scanty urination etc.</i>
11	<i>Purishvaha</i>	<i>Constipation, distension, atopa, grathitantra, L.B.S. etc.</i>
12	<i>Swedvaha</i>	<i>Swedādikyata. Parusata, Paridaha Lomaharya etc.</i>
13	<i>Aartavaha</i>	<i>Vandhyatva, Yoni vyapath etc.</i>

Aging and Ojas

According to *Ayurveda*, the quaint essence of all seven *Dhatus* is *Ojas*. The same is *Bala* and is responsible for resistance against diseases i. e. *Vyadhi kṣamatva Sakti*. The seat of *Ojas* is *Hrudya*. *Ojas* is able to nourish and strengthen the *Dhatus*, giving energy, provides happiness, and lustre, and balances the function of *Indriyas*.

In old age, as the *Ksaya* of *Saptadhatu*s is observed naturally it leads to *Ojoksaya* which is again of three types:

1. ***Ojovisramsā*** -*Sandhivisteṣa*, *Gātra sada*, *Dosa cyavana*, *Kriya sannirodha*.
2. ***Ojovyapad*** – *Stabda*. *Gurugātrata*, *Vatasopha*, *Glani*, *Tandra*, *Nidra*. *Varcobheda*
3. ***Ojokṣaya*** - *Murca*, *Moha*, *Manasakṣaya*, *Pralāpa*, *Marana*.
which in an inevitable process involves a structural & functional change in the body and the role of *Dosa*, *Dhatu*. *Mala*. *Sarwa*, *Agni*. *Srotas*. *Ojas* has been considered with respect to the aging process.

Discussion:

Aging is a natural phenomenon, It is categorized under the head of natural diseases. These natural diseases are due to *Swabhava* (nature) and depend on *kala* (time).^{16, 17} In old age, As per *trisdosha* concerned, *vayu* responsible for the most of manifestation of aging i.e. *kshay* and *shosha* of *dhatu*s. As per *dhatu*s concerned, *vikrit vatadosha* leads to malformation of *rasa dhatu*, it ultimately leads to *dhatukshaya*. As per *Agni* concerned, *vishmāgni* leads to defective metabolism leads to *uttapati* of different *rogas* like *Adhman*, *Ajeerna*, *Antrakujan* etc. As per *mala* concerned,

hampered *Agni* leads to *mal kshay*. As *perindriya* concerned, *vikrita pran vayu* and decrease *Tarpak kapha* hampered all the normal functions of *indriyas*. As per *srotas* concerned, due to *khavaigunya* the *doshadushya sammorchana* occurs leading to different features manifested by *strotodushti*. As per *oja* concerned, hampered *Agni* leads to deleterious changes which naturally leads to *ojakshaya*. Thus all these factors play important role in natural aging. In *Ayurveda* some *siddhantas* mentioned, with such measures it is possible to prevent premature aging and to slow down the process of aging. Thus, it is clear comprehensive description of aging.

Conclusion:

Aging is a natural process, in which the body is undergoing some changes continuously. The *pathophysiology* of Aging is depend on various factors such as *Dosha*, *Dhatu*, *Mala*, *Agni* etc. All these factors helps in maintaining homeostasis which maintain the skin health and natural Aging. All the factors in imbalanced state are responsible for speed up the process of aging and premature Aging. In *Ayurveda*, different *siddhants* are mentioned like *dincharya*, *rutucharya*, *sadvritta* etc, which kept all these factors in balanced state. By following all these *shiddhanta*, we can slow down the process of aging and prevent the premature Aging.

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