Evaluation of the role of diet & life style in premature ageing

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Abstract

Ageing is the mixture of three different dimensions – chronological, biological & psychological. It is described as Jara: Kalaja (timely) & Akalaja (premature ageing) in ancient classics with decade wise deterioration in biological functions. The present clinical study deals with the evaluation of dietary habits, life style related factors, mental health disturbance etc., affecting the premature ageing.

Key words: Premature ageing, Akalaja jara, Ama, Free radical, Diet, Life style

Introduction

Ageing is the process of relentless & progressively downhill course of decline in structure & function of every organ system of human body. It is correctly stated that ageing begins before birth & continues throughout life at different rates, in different races, for different individuals & for different tissues of the body. It involves two opposite processes that simultaneously come into operation i.e. growth & atrophy. It represents structural & functional changes of an organism over its entire life span. A person's age is mixture of three different ages: chronological, biological & psychological.[1] The chronological age cannot be changed whereas the biological and psychological age depends upon the individuals how they influence them. According to Ayurveda, Ageing is described of two types-Kalaja & Akalaja jara.[2]

The Kalaja jara (Timely ageing) is nothing but chronological age which occurs naturally whereas Akalaja jara (Premature ageing) which includes biological & psychological ageing, measures age in terms of physical & mental capacity respectively. On these two types of ageing there is a great influence of diet & lifestyle. Sharangadhara has described decade wise loss of different biological factors as a consequence of ageing in total life span of 100 yrs., which includes gradual loss of childhood, growth, beauty, intellect, health of skin, vision, reproductive capacity, vigor, wisdom & loco motor activity.[3]

As per classics two groups of doshas are responsible for all the psychosomatic illnesses. The sharira doshas-Vata, Pitta & Kapha are vitiated in somatic illness & the Manasika doshas- Raja & Tama in psychic illness. These doshas are equally responsible for maintenance of the health and regulated by diet & life style. When the diet, behavior & code of conduct go wrong knowingly, it is termed as Prajnaparadha, the main cause for all these disturbances.[4] As a result these doshas gets deranged & person gets inflicted with different diseases including Ageing.

The somatic changes observed during ageing process are: flabbying of the muscles, looseness of joints, Vidaha (malfunction) of the blood, liquefaction of the adipose tissue, improper function of Majja, diminished semen, exhaustion, languid, excessive sleep, torpor, sluggishness (absence of enthusiasm), incapable of doing physical as well as labor work, etc.[5] The mental variations include: Grahana - Dharana - Smarana - Vachana – Vijnanahani (reduction in the capacity of

perception, retention, recollection, speech & knowledge) along with Paurusha - Parakrama –Utsaha kshaya.[6]

Factors Influencing Longevity

The causative factors affecting ageing are kala (time)[7], swabhava (theory of natural destruction)[2], vayu[9], virodhaka bhava[9], desha (climatic condition)[10], ahara sausthavam (dietary habits)[11] & avighata (manao avighata – stress). Among them dietary habits & stressful lifestyle were rightly justified by scientists in the form of increased air pollution, smoking, increased caloric intake & stress, generating free radicals eventually hastening the process of ageing.

Ageing occurs when the body's cells die at faster rates than new cells are generated. People age prematurely because inadequate nutrition resulting from poor diet stimulates cellular destruction & increases the potential for obesity, diabetes, cancer & other chronic diseases. Many theories have been put forth related to ageing. The genetic factor, environment, functional activity & personal habits are the factors which influence longevity & ageing process. Though the genetic factor is important cause but "Ageing is not a programmed process governed directly by genes" because not only the genes but also the interaction of the genes with environment affects the age. In addition diet, exercise habits & stress level all may affect ageing process. Ancient sages have given more importance to healthy life style than medication and described 'Swastha Chatushka' different ways to keep away from early ageing. Due importance is given on following the swashtavritta, dinacharya, ratricharya, ritucharya, sadvritta etc. Moreover, Ahara, Nidra & Brahmacharya are described as subpillars of life[12] and proper follow up of these rules can keep away premature ageing.

Dietary Habits – Life style vis-à-vis Ageing

Dietary Habits: An old proverb says: "we are what we eat". Study has shown that there is a strong connection between foods and Ageing. Diet is an essential factor & basic need to all livings. It is proven an aged look, which comes from a dull, lifeless body, comes from bad eating habits. "Make food your ally, not your enemy to have a better chance of beating Ageing".

In Ayurveda, detail description is available related of dietary habits to remain healthy as well as causing disease condition. The dietary habits related to healthy ageing are: quantity & quality of diet as per the digestive capacity,[13] avoidance of taking dietetic incompatibilities, sour, pungent taste dominant, alkali, dry vegetable & meat, tila samyoga, pista anna, dry cereal, abhisyandi anna, klinna & heavy food, contaminated & stell food, improper eating habits, over eating etc. All these regularly lead to early ageing. The diet should be taken as per its guna, karma and prescribed methods in different seasons. The food which is suitable to maintain health should be used (satmaya) and unsuitable which may cause diseases should be avoided (asatmya).[14] Kshara (salt extracted from different dietary substances used as condiments in diet) if used in excess, proves harmful for hair, eyes, heart and sexual ability. The people of villages, towns, countries, who use this substance continuously, become blind, impotent, and suffer from grey hair, blindness & cutting type of pain in cardiac region.[15] Excessive intake of pippali, kshara & lavana leads to premature graying & falling of hairs, wrinkles.[16]

Complete dietetics for healthy ageing is elaborated in "Ashtavidha Ahara Vidhi Visheshayatana': There are eight specific factors of method of dieting such as: Prakriti (nature), Karana (processing), Samyoga (combination), Rashi (quantity), Desha (place), Kala (time), Upayogasamstha (rules for use) & Upayokta (consumer).[17] The

prescribed method of dieting for the healthy and sick who takes wholesome food timely and usually- One should eat warm, unctuous, in proper quantity, after the previous food is digested, non-antagonistic, in favourable place, with all favourable accessories, not too fast, not too slow, not while talking or laughing and with full concentration after due consideration to the self.[18] Even the wholesome food also taken in proper quantity, does not get digested due to anxiety, grief, anger, uncomfortable bed and vigil and leads to generation of Ama (metabolic histotoxic product)[19] which is the root cause for all diseases including the ageing.

Life Style: The Lifestyle is elaborately discussed in Ayurvedic literature for preventive, promotive and curative aspects of Ageing. The practising of dinacharya (daily routine) like massage, insufflations, bath etc. keeps the body healthy.[20] Moreover changing of lifestyle as per the condition of nature & body according to seasonal regimen is also the way to maintain healthy state.[21] Natural urges of urine, stool, flatulence, sleep etc. are physiological but its suppression generates pathological states & may lead to early ageing. The urges like fear, lust etc. should be hold up.[22] Sadvrittapalana, Achara rasayana etc. are type of social medicine to improve positive health. Proper exercise, sleep & sexual intercourse keep the body healthy. The mental status of an individual affects the entire system of body. The positive emotions maintain the healthy state & negative emotions cause the illnesses. Positive emotions like: Harsha (pleasure) is best for Prinana (anabolic effet),Vijnana is best among all the Aushadhi for mana, Saumansya is best for Garbha dharana and negative emotions like: Vishada (sadness) is worst for Roga vardhana, Shoka (grief) is worst for Shoshana (emaciation), Daurmanasya for Avrishyata (sexual difficulty) and Lolya is for Klesha.[23] Thus

these disturbed Manasika bhavas also give rise to early manifestation of sign & symptoms of Ageing i.e., premature ageing.

Etiological factors related to Life style are: excessive walk, day sleeping, excessive intercourse, excessive intake of alcohol, improper exercise. The disturbed Manasika bhavas causing premature ageing are: Bhaya(fear), Krodha(anger), Shoka(sorrow), Lobha(greed),Moha(affection), Rukshavani(harsh words), kalahpriya bharya(quarrelsome wife), kuputra(maladroit son) etc.[24] As per modern literature, the incorrect life style includes: stress, addiction of alcohol & drinks based on caffeine, excessive TV watching, improper condition for sleeping, improper exercise or sedentary lifestyle are the root cause of many diseases including *Ageing.*

Free radicals & Ageing

Free radical theory is most popular theory of ageing. It postulates that ageing results from an accumulation of change caused by reactions in the body initiated by highly reactive molecules known as free radicals. There are two sources of free radicals: exogenous & endogenous. The exogenous sources include air pollution (industrial waste, cigarette smoke etc.) radiation, drugs and pathogens. Trace metals, notably lead, mercury, iron and copper are also major sources of free radical generation. Normal diets containing plant foods with large quantities of certain compounds such as phenols and even caffeine may contribute to the exogenous supply of oxidants to the body. Endogenous free radicals are produced in the body by different mechanisms. These free radicals cause cellular damage through lipid per oxidation, DNA damages and oxidative damage of proteins. Each cell protects itself from the onslaught of free radicals by producing free radical scavengers such as enzymes that neutralize free radicals. Thus balance is maintained between generation of free radicals and scavenging enzymes. This

is known as Antiodxidant mechanism or defense system. These antioxidants act by any of the three mechanisms i.e., by inhibiting the generation of Reactive Oxygen Species (ROS) or by directly scavenging the free radicals or by raising endogenous antioxidant defenses. This antioxidant defense is of two types viz. primary and secondary, out of which primary is subdivided into antioxidant nutrients and antioxidant scavenging enzymes. Antioxidant nutrients are â-carotene, á-tocopherol, Vitamin-C, selenium, Zn, Mn, Cu, etc. while antioxidant scavenging enzymes include superioxide dismutase (SOD), catalase and peroxidases.

While SOD lowers the state level of O2, catalase and peroxidases do the same for H2O2. Restricting the caloric intake has shown the delay in Ageing through decreased production of mitochondrial O2 and H2O2 and increased production of antioxidant defenses.

Ama can get formed either at the level of jatharagni or bhutagni or dhatvagni. Ama formed at dhatvagni level will show harmful effects on the tissue elements, thereby all over the body, which is similar to the damage starting at cellular level caused by free radicals. Thus, it can be stated that vaishamyata of dhatvagni can be due to stress which in turn forms Ama.

Table 1. Ama & free radical[25]

Free radical	Ama
Stress	Disturbed Manasika Bhava
Exogenous causes - Pollutants, dangerous chemicals, certain products	Mithya Ahara Vihara
Endogenous Causes – due to deficiency of certain enzymes like SOD	Mandagni
Atom/molecule containing one or more unpaired electrons, which exits in an incomplete metabolic state	Apachyamana
Inassimilable to body components & exits in free state	Visharupam
Cause damage to cell membrane & cause destroy cells, leads to putrefaction & foul smell generation	Daurgandhatvam, Shuktatvam
Quickly interact with healthy molecule of body thus setting chain reaction	Ashukari
Impaired action of Free Radical Scavenger	Dhatwagni Daurbalya
Increased production at the site	Ama Sanchaya
Starts reacting with the weak cell membrane	Sthanasamshraya at the site of Khavaigunya
Production of Signs & Symptoms of Ageing	Production of Signs & Symptoms of Jara

Recent researches have shown that certain foods with a rich level of antioxidants (vitamin A, C, E, selenium, zinc, beta-carotene) counteracts the free radical damages produced by the day stress, smoking, pollution and ultraviolet rays which may cause symptoms of Ageing. A high level of antioxidants can be found in uncooked fruits and vegetables like: broccoli, carrots, spinach, green tea, hazelnuts, tomatoes, papaya, avocado, black grapes, raspberries, strawberries, peas, prunes, sweet potatoes and mango, which reduces high blood pressure and blood sugar level; helps losing weight the natural way; has anti-inflammatory properties, contains polyphenols which are powerful antioxidants. Also foods that contain Omega 3 and 6 fatty acids (Cow's ghee, oily fish, flax seeds and flax seed oil, Brazil nuts, extra virgin olive oil) are excellent for beating Ageing.1 All these good oils should be used in cooking that involves heating, pressing, bottling because at high temperatures they lose their nutrients. Their consumption helps the body looking healthier, younger, but because they are rich in calories they should not be used in excess. To remain healthy, have to drink enough water so that body will not get dehydrate. Water helps the metabolism of the cells to eliminate toxins and brings in nutrients.

Material & Method

Total 35 patients (30 to 60 yrs) attending O.P.D. of Dept. of Kayachikitsa, Panchakarma & Manasa Roga, I.P.G.T. & R.A., Hospital, having sign and symptoms of premature ageing irrespective of their sex, religion etc. had been selected after excluding diseases like diabetes mellitus, heart disease, hemiplegia etc. A special research proforma was prepared incorporating all sign and symptoms of Premature Ageing and Mental Health based on Ayurvedic and modern medical literature.

Observation & Results

Table 3. Food, Ghee-Oil & Supplementary Diet

Symptoms	%	Symptoms	%
		Medha hani	
Twak Parushata	94.29	Grahana hani	97.14
Slatha Sara	100	Dharana hani	97.14
Slatha Mamsa	91.43	Smarana hani	100
Slatha Asthi	85.71	Vijnana hani	62.86
Slatha Sandhi	82.86	Vachana hani	12.86
Dhatu Kshaya	100	Utsaha hani	97.14
Kayasya Avanamana	5.71	Parakrama hani	100
Vepathu	45.71	Paurush hani	28.57
Khalitya	100	Prabha hani	94.39
Vali	97.14	Shukra Kshya	31.43
Palitya	94.29	Dristi Hras	60
Kasa	71.43	Karmendriya hani	71.43
Shwasa	57.14	Buddhi hani	68.57

Table 2. Signs & Symptoms observed in 35 patients

Type of Food	%	Type of ghee & oil	%	Supplementary diet	%
Vegetables	40	Cow Ghee	0	Tea	88.57
Fruits	34.29	Buffalo Ghee	40	Coffee	28.57
Cereals	100	Vegetable Ghee	60	Cold drinks	34.29
Pulses	62.86	Ground nut oil	62.86		
Junk food	57.14	Sunflower oil	2.86		
Dry food	31.43	Coconut oil	0		
Milk	35	Cottonseed oil	28.57		
		Mustered oil	5.71		

Table 4. Ayogya Ahara Vidhi, Rasa, Guna & Diet Habit

Ayogya Aharavidhi	%	Rasa	%	Guna	%	Diet Habit	%
Anushna	77.14	Madhura	62.86	Guru	57.14	Samashana	31.43
Asnigdha	42.86	Amla	62.86	Laghu	42.86	Vishamasana	45.71
Amatravata	62.86	Lavana	94.29	Sheeta	57.14	Adhyashana	22.86
Ajirne	77.14	Katu	68.57	Ushna	54.28		
Viryaviruddha	85.71	Tikta	5.71	Snigdha	48.57		
Anishtadesha	28.57	Kashaya	2.86	Ruksha	54.28		
Anishta upakarana	28.57						
Amanaska	91.43						
Atmanam anabhikshyam	74.29						
Atidruta	51.43						
Ativilambita	17.14						

Table 5. Exercise, Nidra & Addiction

Exercise	%	Nidra	%	Addiction	%
Regular	14.29	Samyaka	5.71	Tobacco chewing	5.71
Irregular	34.29	Asamyaka	85.71	Smoking	0
No exercise	51.42	Alpa	57.14	Alcohol	5.71
Less	28.57	Prabhuta	11.43	Sedatives	0
Proper	11.43	Khandita	54.29		
Excess	5.71	Diwaswapna	57.14		
		Raatrijagarana	57.14		

Table 6. Determination of Anxiety & Depression State*

Anxiety state	%	Depression state	%
No Anxiety	5.71	No Depression	8.57
Mild Anxiety	48.57	Mild Depression	62.86
Moderate Anxiety	45.71	Moderate Depression	28.57
Severe Anxiety	0	Severe Depression	0
Very Severe Anxiety	0	Very Severe Depression	0

* Based On Hamilton's Anxiety & Depression Rating Scale

Table 7. Disturbed Manasika Bhava

Negeative emotions	%	Positive emotions	%
Bhaya	77.14	Dainyam	80
Krodha	94.29	Dhriti	80
Shoka	80.57	Harsha	94.29
Dwesha	85.71	Priti	88.57
Rajah	91.43	Virya	91.43
Vishada	97.14	Shraddha	77.14
Moha	88.57	Medha	100
Chinta	97.14	Avasthana	82.86
Manasa	91.43	Upadhi	77.14
Hriya	77.14	Vijnana	82.86
		Vashyata	65.71
		Shila	37.14
		Samgya	91.43
		Smriti	100

Maximum patients (48.57 %) belonged to the age group of 30-40 yrs, with maximum females (68.57%). This suggests that at the time of 3rd decade of life, the Ageing related changes appear because of stressful life.

The females are more prone to disease since they have to face more emotional and domestic stress. Maximum patients (94.29%) were belonging to Hindu community, because of predominance of Hindu geographical

territory. The 88.57% patients were married. The married people have family commitments & more responsibilities leading to stressful life and eventually may cause early Ageing. Maximum patients (45.71%) were educated up to graduation. Each of the patients (45.71%) was either in service or household highlighting the role of educational status and type of occupation in the occurrence of premature ageing. The cause behind it may be the increasing competition in every field of life. Occupational, economical & educational problems leading to stress and depression, lack of mental stability etc. are more evident in today's life leading to premature ageing. Maximum patients (31.43%) were from middle class & 25.71% patients were from upper middle class. Although ageing can affect more to lower class because of excessive hard work, inadequate nutrition and improper health care. But the middle class and other upper economic class stress and busy life may be the main culprit. The people from this class are also more conscious about their bodily changes.

Evaluating the mental health as per Hamilton Anxiety Rating Scale, mild anxiety was observed in 48.57% patients while 45.71% patients had moderate anxiety. Maximum patients (82.86% each) had gastrointestinal symptoms & tension. The 80% patients had insomnia followed by 77.14% patients each with anxious mood, intellectual (cognitive), cardiovascular symptoms and 71.43% patients each with depressed mood and fear. On Hamilton Depression Rating Scale, mild depression was found in 62.86% patients followed by moderate depression (28.57%). Maximum patients (82.86%) had somatic symptoms of GIT, while 80% had insomnia. The 77.14% patients each had less work interest & activities, retardation and psychic anxiety. The 71.43% patients had depressed mood, 68.57% patients each had general somatic symptoms and somatic anxiety. Observing Brief Psychiatry Rating Scale, maximum patients had anxiety (85.71%) followed by tension (82.86%), emotional withdrawal (77.14%) and somatic concern (71.43%). This scale is mainly used to diagnose psychiatric disorders.

Discussion

Dietary Habits

Analyzing the role of dietary habits, it was observed that maximum patients (85.71%) were vegetarian. They were taking vegetables (40%), fruits (34.29%) & dry fruits (31.43%), milk (20%) in their routine diet, while 57.14% patients were taking junk food. Patients were using vegetable ghee (60%) followed by groundnut oil (62.86%) and none of them were using cow's ghee. They used to take tea (88.57%) & cold drinks (29%). Analyzing ayogya ahara viddhi, patients, at the time of diet were found Anmanaska (91.43%). They were taking viryaviruddha ahara (85.71%), Anushna ahara and ajirne ahara (77.14% each). The 74.29% patients were not taking their diet Atmanam Abhikshya. Due importance is given to method of food taking but maximum patients were not following such rules, which were indicated in the text to remain healthy. Analyzing the predominant rasa of ahara, it was observed that diet comprising of excessive of lavana rasa was consumed by 94.29% of the patients, madhura & amla rasa by 62.86% each, katu rasa by 68.57%, tikta 5.71% and kashaya rasa by 2.86% of the patients. The rasa in ahara might act on sharirika and manasika dosha both. Madhura, amla, lavana rasa are responsible for kapha vriddhi (increase) and katu, tikta, kashaya for its kshaya (decrease). The equilibrium of the dosha may be disturbed due to excessive consumption of any single rasa. Moreover, rasa is also responsible for the exacerbation of manasika dosha as katu, lavana rasa increase Rajas. The excess of amla rasa is also said to be the main cause for precipitating the jara (As.S.Su.10/80). The lavana rasa is said to be the cause for valita, palita etc., and the main signs of akalaj jara. Evaluating the predominant guna of ahara, it was found that maximum patients (57.14%) were taking guru and sheeta guna dominant ahara followed by ushna and ruksha guna dominant ahara (54.28%). Remaining patients had snigdha and laghu guna dominant ahara (48.57% & 42.86%, respectively). The guna of ahara affects the digestion, dosha & dhatus. Majority of the patients (45.71%) were following vishamashana followed by samashana (31.43%) and adhyashana (22.86%). These types of food habits except samashana might be responsible for precipitating akalaja jara. Adhyasana causes agnimandya, responsible for ama and causes kapha prakopa. Visamasana is responsible for vata vriddhi and included in nidana of akalaja jara. Maximum patients (57.14%) had krura kostha followed by mridu kostha (22.86%) which shows the increase of vata dosha. The mridu kostha is because of pitta dominance in the patients.

Life Style

The data related to lifestyle shows that patients (51.42%) were not doing any exercise while 34.29% were doing exercise irregularly. Lack of it and sedentary life style is known to deteriorate healthy ageing. Therefore exercise is a must to increase bala. Sleep is said among the tripod of life. Improper sleep gives rise to many biological changes that may lead to premature ageing. Stress is a known factor to induce sleep disturbance. The data suggest that asamyaka nidra was observed in 85.71% patients, diwaswapna, ratrijagarana and alpa nidra 57.14% patients each. Maximum patients (74.29%) had asamyaka dinacharya whereas 45.71% had asamyaka ratricharya. Though 61.43% patients had samyaka ritucharya but 28.57% had asamyaka ritucharya. Furthermore, 25.71% patients had asamyaka

sadvrittapalana. Maximum patients (91.43 %) were not doing samshodhana as recommended in the classics. The data on life style is mainly responsible for vata Prakopa and the day sleep causes agnimandya. Excessive vyayama or excessive labor occupation may cause dhatu kshaya and if not suitably replaced may produce the pathology of akalaja jara. Practicing the rules for dinacharya, ratricharya, ritucharya, samhodhana & sadvritta properly has itself the rejuvenating effects. These patients had addiction of tea, coffee, cold drinks and tobacco chewing and alcohol consumption. These habits act first as stimulant in smaller quantity followed by depressor in larger quantity affecting the Rajas and Tamas. Addictions are known to cause vasoconstriction and leads to early Ageing changes. According to Ayurveda, these addictions are known to cause ojakshaya by virtue of vikasi guna and vataprakopa as a consequence of dhatukshaya, which in turn causes premature ageing. Though the data collected is very small sample but the number of addicted people is increasing and they become older before time.

Evaluating the role of manasika bhava (emotions), maximum patients had history of increased negative emotions like chinta & vishada (97.14% each), krodha (94.29%), rajah & manasa (91.43% each) and shoka (88.57%). On the other hand decrease in positive emotions was observed like: medha & smriti (100% each), harsha (94.29%), virya & samgya (91.43% each), priti (88.57%), avasthana & vijnana (82.86% each) and dainya & dhriti (80% each). Every change in the mental faculty leads to bodily changes. The relation of manasika bhava with sharirika doshas is well documented. The onslaught of emotions like anger, fear etc increases the stress which may bring about neuro-endocrine changes. As per Hamilton Anxiety Rating Scale, 48.57% patients had mild anxiety while 45.71% had moderate anxiety whereas as per Hamilton Depression Rating Scale, 62.86% patients had mild depression & 28.57% had moderate depression. Everyone in modern society lives under an increasing load of stress. Under stressful situation, the free radical balance in the body is constantly tipped in the wrong direction. Systematic damage is the inevitable result. Chronic stress leads to mental frustration, anxiety and depression. This stress wears the immune system down, and the body becomes prey to disease including the premature ageing.

Conclusion

Improper food habit, life style & disturbed manasika bhava- stress are the main causative factors of premature ageing. Therefore from the very beginning, one advised to take care of his body & mind by practicing the rules of daily routine, seasonal routine, biopurification & code of conduct. A package of healthy dietetics & healthy life style is recommended to either prevent premature ageing or to attain healthy ageing.

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