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Review Article

A critical appraisal of dementia with special reference to *Smritibuddhihrass*

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Abstract

Dementia (*Smritibuddhihrass*) is a chronic organic mental disorder, characterized by progressive usually irreversible, global cognitive deficit. Presently no reliable treatment is available to check the progression of the disease in the conventional medicine. Although this condition is not described as a disease moiety in a separate chapter among Ayurvedic classics but the signs and symptoms along with pathogenesis of dementia can be understood in terms of Ayurvedic concepts. As a large part of pathogenesis of dementia involves neurodegeneration, *Rasayana* and *Panchkarma* therapy play an very important role in the management of dementia. These therapeutic techniques have the potential to check the progression of disease as well as can improve the deficit in cognitive functions of these patients. In the present paper the possible pathogenesis of Dementia in the terms of Ayurvedic concepts has been discussed and suggested the management profiles from Ayurvedic perspectives which can be beneficially utilized for this important class of geriatric disorders.

Key words: Dementia*, Smritibuddhihrass,* Ayurvedic management

Introduction

Interest in the study and care of patients with dementia has greatly increased since it is the burning problem of the pre-senile and the senile age currently. The report published in Alzheimer's and Dementia Journal supplement in 2007, has been estimated that the number of dementia patients world over will be 30 million in 2008, 59 million in 2030 and 104 million in 2050. There will be an increase between 200 and 500% in different regions of world (Asian region 49.7%).[1] Dementia is 1.5 times more common in females than males. Thus, with this rate of increase, dementia is going to be an epidemic around the mid-21st century. The age is the most important risk factor for dementia; the incidence rises exponentially between the age of 60 and 80 and slows thereafter.[2]

At the present time, no treatment is available to alter the relentless deterioration of this disease. A number of attempts have been made for neurotransmitter replacement

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therapy in Alzheimer's type dementia, but these drugs cause hepatotoxicity. The overall management is very difficult and frustrating as there is no specific treatment and the primary focus on long-term amelioration of associated behavioral and neurologic problems. Building rapport with the patient's family members and other care givers is very essential for successful management, but is found to be very difficult. Moreover, the available medication is expensive and hepatotoxic, necessitating frequent testing of liver function and adjustment of the dose. As the majority of causes of dementia are under the category of neurodegenerative diseases. In the Ayurvedic system of medicine, *Rasayana* and *Panchkarma* therapy are very useful in the management of dementia. The *Rasayana* therapy has the property to check the presenile and senile *Dhatu Vaigunya* and *Kshaya* (degeneration).

The clinical presentation of dementia is characterized by impairment of intellectual functions, impairment of memory (predominantly recent memory in early stages), deterioration of personality with lack of personal care. Impairment of all these functions occurs globally, causing interference with day-to-day activities and interpersonal relationships. There is impairment of judgment and impulse control and also impairment of abstract thinking. Additional features may also present such as emotional lability, catastrophic reactions and thought abnormalities, e.g. delusions, perseveration etc., urinary and fecal incontinence may develop

in late stages. Disorientation in time, place and the person develops in late stages.[3]

This condition is not met as a disease entity in separate chapters of Ayurvedic classics and considered as a natural phenomenon, but sign and symptoms of dementia can be understood in terms of Ayurvedic concepts. In order to understand the etiopathogenesis of dementia in the light of Ayurvedic literature it is necessary to review the general physiology of *Manas* and *Buddhi*. Before discussing the etiology and psychopathology of *Smritibuddhihrass*, it is worth considering the relation of *Mana*, *Buddhi*, *Medha*, *Dhriti* and *Smriti* with each other. In the process of knowledge, mental faculty that determines the nature, merits and demerits of an object of knowledge is *Buddhi*. *Buddhi* and *Mana* are related with *Karya Karana Sambandh* as in the process of evolution, *Buddhi* is the first entity (*Tatva*), which is responsible for further development of *Indriyas* and *Manas*.[4]

According to Ayurveda, *Manas* and *Indriyas* are *Panchbhautic* and this concept is very useful regarding anatomical aspect of *Mana*, further *Acharya Bhela* was the first who finally stopped the debate about location of *Manas* and stated that it is present in between *Shira* and *Talu* i.e. in the *Mastishka*. Now, it is very clear that all regulatory and cognitive functions are carried out by activity of the brain and human beings are different from other developed animals in that they have larger brain. Now, it is important to discuss *Mastishka* and the view of Ayurveda regarding this.

Brain *(Mastishka)* in Classics

According to the Ayurvedic concept, the *Mastishka* or *Mastulunga* are derived from *Majja Dhatu* and is like semisolid *Ghrita* viz.[5,6]

- *Shirastho Majja*
- *Mastulunga Shirso Baladhanam Styanaghritakaram Mastulungamuchyate*
- *Ardhavilina Ghritakaromastaka Majja*

It is important to note that *Asthi Majja Kshaya* is more important features in females. Similarly, dementias due to neurodegenerative diseases are also more common in females than males.[7]

Acharya Charaka also said that *Shira* is most vital in comparison with other body parts as all *Indriyas* and *Prana* reside in the head and hence he gave the term *Uttamang* for head.

Shiras plays a very important role in the formation of *Buddhi* as shown in Figure 1.[8]

From the above description it is clear that *Indryas*, *Manas* and *Prana* reside inside the brain and *Buddhi* (*Prajnya*) is the

Figure 1: Formation of *Buddhi* according to *Acharya* Charaka

ultimate function of these factors. If any disturbance occurs in the brain either at anatomical or physiological level, the *Prajnya* is directly affected. Some examples are:

1. *Dhibhramsha* (with *Mana Sanjnyajnyana* etc.) - (*Unmada* and *Atatvabhinivesa*)
2. *Smritinasha* (with *Bibhatsachesta*) - (*Apasmara*)
3. *Dhritibhramsha* - (*Madatyaya*, *Mada* etc.)

Cognitive process

(1) *Indriya* receives *Arthas* when associated with *Manas-Manah Purah Sarani Indriyanyartha Grahana Samarthani Bhavanti*.[9] This perception needs a chain of *Artha*, *Indriya*, *Manas* and *Atma*.[10] This perception is called as *Uha*.

(2) After this, process of actual analysis starts by *Manas*, i.e., *Chintan*, *Vichara*, *Uha*, *Samkalpa* are performed. It gives the determination to perception. Hence, the journey from perception to determination, i.e. *Adhyavasaya* or *Nischayatmaka Buddhi* is the first half of the physiology of *Manas*.

(3) The second half of the physiology of *Manas* is related with *Karmendriyas*. *Manas* being *Ubhayatmaka Indriya*, it has to coordinate both *Jnanendriya* and *Karmendriya* in harmony with each other. After determination of the knowledge perceived by *Jnanendriyas*, essential desired reflex action is to be carried out, which is coordinated by *Manas* with the help of determined knowledge, i.e. *Nischayatmaka Buddhi*. Further initiation of the action is carried out by *Karmendriyas*.

From above description it is confirms that *Manas* is the important factor in the origin of *Prajnya* and hence, all activities (*Karmas*) which are being done. However, *Mana* itself is regulated by *Vata* and in old age (*Vriddhavastha*), *Vatavaigunya* is already present hence functions of *Manas* is also affected physiologically to a great extent.

Dimensions of cognitive process

Prajnya and *Buddhi* have been termed as synonyms in *Amarkosh* as:[11]

Buddhimanishadhishana Dhi Prajnya Shemushi Mati,

Prekshoplabdhi Chittasamvitpratipagyagyapti Chetana.

Charaka define (*Prajnya*) *Buddhi* as "*Nischyatmakamjnanam*". *Prajnya* is further described under the three forms - *Dhi*, *Dhriti* and *Smriti*

Dhi is the power that differentiates between *Hita* (wholesome) and *Ahita* (unwholesome), external and internal factors (*Bhavas*) that affect the *Mana* and *Sharira*.

Dhriti[12] is the power that controls the orientation and attitude. It is the regulator of the functions of *Manas* while *Smriti* helps the mind in recollecting the entire percepted or obtained knowledge on the basis of the concept formed by previous experiences. The mind behaves accordingly by remembering the ethics (*Tatvajnana*).[13] *Medha* is the power that grasps and retains the knowledge, which is also not possible without the conjunction of mind. Hence, all these faculties are interlinked with each other and derangement of any of these will reflect on each other.

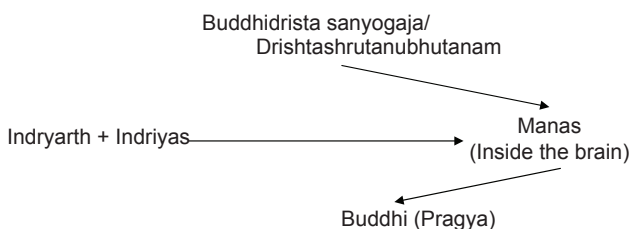Ayurveda has also described eight factors, which are responsible for retrieval of the acquired knowledge. They

are-*Nimitta*: By perception of *Karan* remembering the *Karya*, *Rupagrahanat*: By perception of form of an object remembering another object of the same form, *Sadrishyat*: Knowledge of similarity is also helpful for remembering an object *Saviparyayat*: Knowledge of contrast is another factor of the *Smriti* e.g.,: having seen an ugly form, one remembers a beautiful form. *Sattvanubandhat*: Concentration of mind is another important factor for *Smriti*. *Abhyasa*: By repetition of same things one can remember even difficult things for a longer period. *Jnana Yoga*: Attainment of metaphysical knowledge may be called *Jnanayoga*, which is also called *Tattvajnanayoga*. This *Tattvajnanayoga* attributed to be one of the causes of the recollection of the past. *Punah Shrutat*: Subsequent partial communication also helps in better *Smriti*. For instance, when a thing has passed away from the memory, then even a slight hint or previous reference can help in memorizing that thing.[14]

Out of these eight factors described, *Sattvanubandha* is the most important because in the absence of *Satttvanubandha* there is no perception of any knowledge by the individual soul (*Atma*) as *Maharshi Charak* states:

"*Laksanam Manaso Jnanasyabhaobhava Eva Cha*" (*Charak sharir* 1/18).[15] Hence any alteration in the *Sattvanubandha* mechanism definitely originates altered, false or insufficient knowledge. *Maharishi Charaka* also described the character of altered *Dhi*, *Dhriti* and *Smriti* which is pertinent to be discussed in this reference:

Dhivibhramsha: *Dhivibhramsha* refers to derangement of understanding where by the eternal and the non-eternal (*Nityanitya*), good and evil (*Hitahita*) are mistaken one for the other, for true understanding always perceive things in proper prospective.[16]

Dhritivibhransha: In the event of the derangement of the will (*Dhriti*), the psyche (*Sattva*) which is always reaching out for its favorable objects, is incapable of being restrained from undesirable objects, for the will (*Dhriti*) is the controller and regulator.[17]

Smritivibhransha: When on account of the psyche (*Manas*) being clouded with passion and delusion, i.e. *Rajomohavritatmanah*, the retention of true knowledge is destroyed. The state is called the derangement of memory (*Smriti*); for indeed the memorable things abode in the memory.[18]

In dementia, memory (*Smriti*) impairment is usually early and prominent but is not anatomically localized; it may reflect disrupted registration (frontotemporal interactions), encoding (mesial temporal lobe), or retrieval (frontal lobe).[19]

Programmed and premature aging in relation to dementia

As indicated above, the age is the most important risk factor for dementia, it is necessary to discuss some important aspects of aging in relation to dementia. Also, brain aging and its manifestations form the most important component of the aging process as it may lead to more crippling impact than gross somatic aging. *Swabhava-Bala-Pravritta* diseases occur as a result of the natural tendency of the body. They have been classified into two groups' viz. *Kalaja* and *Akalaja*.

Therefore, aging occurring naturally also can be considered as *Kalaja* and *Akalaja*.

According to *Vriddha Vagbhata* and *Acharya Sarangdhara*, human beings loose one biological entity with the passing of each decade of life which can be shown in Table 1.[20,21]

It is obvious from the foregoing discussion that ageing is a slow and continuous process, which affects various bodily tissues at different times. Some may doubt whether *Prabha* or *Chavi* (body glow) is to be included in the ageing process, but there is no two opinion regarding the inclusion of declining in *Medha* (intellect) as part of ageing. In this way the process of brain ageing, according to Ayurveda, definitely begins in the fourth decade of life, which includes neurodegeneration. Therefore, neurodegeneration starts in the 4th decade as a part of normal phenomena of aging.

The contemporary biosciences also register similar views on brain aging considering it an inevitable phenomenon. The weight and volume of the brain decreases by 5% between ages 30 and 70 years, by 10% by the age 80 years and by 20% by the age of 90 years.[22] Aging is fundamentally the outcome of the overwhelming of the evolutionary processes of the body-mind system by the involutionary events hallmarked with degenerative changes like physiological disturbances of neurotransmitter secretions, blunting of dendrites and synapses and formation of beta amyloidal plaques warranting reparative and rehabilitative care. Many elderly persons become dominantly more handicapped due to the age-related degenerative brain disorders than the actual gross somatic aging.[23] In some pathological states, this process of neurodegeneration may be enhanced and lead to Alzheimer's and other types of dementia.

Premature neuro degeneration and its association with aging

When the rate of the aging process is disproportionate to the age of individual, the appearance of signs and symptoms of ageing (*Jara*) before the normal age occur that are mentioned under the *Aswabhavika* aging or *Kshaya*. It has been termed as *Akalaja Jara*. This type of ageing may be of greater intensity and rapidly progressing if no care is taken to check it. Alzheimer's disease (AD), Parkinson's disease etc., belongs to neurodegenerative category where rate of neurodegeneration is disproportionately increased leading to sign and symptoms of related diseases.

Table 1: Programmed degeneration of body with the time

Decade	*Ashtangasangrah*	*Sharangadhara*
1st	Childhood	Childhood
2nd	Growth	Growth
3rd	Complexion or body glow	Complexion or body glow
4th	*Medha* (intellect)	*Medha* (intellect)
5th	Skin	Skin
6th	*Shukra* (reproduction)	Vision
7th	Vision	*Shukra* (reproduction)
8th	Hearing	Velour
9th	Mind	*Buddhi* (reasoning)
10th	All the remaining *Indriyas*	*Karmendriya*

Causes and risk factors of dementia (*Smritibuddhihrassa*)

The most common causes of dementia are AD (which accounts for approximately 60%), vascular dementia (15%) and mixed vascular and Alzheimer's dementia (15%). Other illnesses that account for approximately 10% include lewy body dementia; Pick's disease; frontotemporal dementias; normal pressure hydrocephalus; alcoholic dementia; infectious dementia such as human immunodeficiency virus or syphilis; and Parkinson's disease.[24]

As described earlier, the age is the foremost factor, which cause neurodegeneration. Apart from age, various other factors, which increase the risk of dementia include: genetic factor, socio-medical and life-style factors. Risk for late onset AD is known to be associated with polymorphisms of the apolipoprotein E gene; people with an ε4 allele have an increased risk of both familial and sporadic forms, accounting for 20-50% of the attributable risk.[25,26]

Study conducted for understanding the sociomedical and life-style risk factors associated with the development of senile dementia demonstrated that the factors significantly associated with an increased risk of dementia were: (1) difficulty in using fingers (2) alcoholic beverage drinking habits (3) less frequent chance to converse (4) much spare time (5) decrease of the number of friends (6) inability to calculate subtractions such as 29-17. On the contrary, habitual physical activities significantly reduced the risk of developing senile dementia.[27] Some other important risk factors includes a history of depression, diabetes, hypertension, stroke, obesity, increase cholesterol, less intake of vegetables, inadequate consumption of water etc.[2,28,29]

Dementia results from the disruption of cerebral neuronal circuits; the quantity of neuronal loss and the location of affected regions are factors that combine to cause the specific disorder. Behavior and mood are modulated by noradrenergic, serotonergic and dopaminergic pathways while acetylcholine seems to be particularly important for memory. Therefore, the loss of cholinergic neurons in AD may underlie the memory impairment while in patients with non-AD dementias, the loss of serotonergic and glutaminergic neurons cause primarily behavioral symptoms, leaving memory relatively spared.

In Ayurvedic literature, the etiological and risk factors for *Aswabhavika Kshaya* has been clearly described by *Acharya* Charaka and Vagbhata, under the heading of *Gramya Ahara-Vihara* and clearly state that, regular practicing of these etiological factors (*Nidanas*) lead to different types of diseases related with premature aging including *Smritibuddhihrass* (Dementia).

The process of aging is enhanced by the factor such as, intake of substandard diet and ingredients of food which are sour, saline, pungent and alkaline, intake of dry vegetable, meat, sesame seeds, paste of sesame seeds and pastries, intake of germinated cereals and pulses, freshly harvested corns with bristles of pulses, ingredients, which are mutually contradictory, unwholesome and unctuous and *Abhisyandi* (those which obstruct the channels of normal circulation), intake of softened, heavy, putrid and stale food, irregular intake of food or taking food before the previous meal are digested, day time sleep, sexual enjoyment and heavy alcohol intake etc., Those who expose their physique to the strain of irregular and excessive exercise and those who are subjected to excess of fear, anger, grief, greed, infatuation and overwork are also having risk of premature aging.[30,31]

It is obvious from the above description that the majority of etiological factors resulting in premature aging because of disproportionate degeneration of body tissues with age and *Smritibuddhihrassa* are mainly related with the diet, life-style and psychological status. They are *Vatavriddhikar, Dhatu-Ojokshayakar, Abhishyandi Srotovarodhaka* and *Raja* and *Tamaguna Vriddhikar.* Thus, they are causing one or more of the following effect in the body-*Srotovarodh* (Blockadge of body channels), *Dhatukshaya* (tissue degeneration), *Ojokshaya* (diminution of *Ojas*), *Manas Dushti* (disturbance in mental functions along with sense faculties), *Smritibuddhihrass* (Dementia), *Vatic* diseases (neurological disorders) etc.

Age related degenerative changes and their effect

Because of the degenerative effect of above mentioned factors, the signs and symptoms which appear in the persons are-muscles becomes flabby, joints becomes vitiated, fat which is accumulated to excess gets liquefied, the marrow does not remain intact inside the bones, *Shukra* and *Oja* also undergo diminution, patient feels exhausted, languid and falls a victim to excess of (morbid) sleep, drowsiness and laziness, patient loses initiatives, gets dyspnea and becomes incapable of doing physical and mental works gradually, loss of memory, intellect and complexion. Furthermore, patient becomes an abode of many diseases and thus fails to enjoy the full span of life.[30,31]

On the basis of the above discussion, knowledge about the neurodegenerative activity, its relationship and understanding of biological changes related with the aging, causes of premature aging and various life-style factors the pathogenesis of dementia has been formulated in Figure 2.

Prognosis

Kalaja and *Swabhavika Smriti-Buddhi Hrasa* due to normal aging process are known as benign senescent forgetfullness or age associed memory impairment and are *Yapya* clinical conditions. *Akalaja* and *Aswabhavika Smriti-Buddhi Hrass* is curable, but with difficulty (*Kashtasadhya*) and sometimes *Yapya* and should be treated according to the *Dosha* and the stage of the disease predominantly with *Rasayana* therapeutic measures.

Strategies for Management

Management of dementia is challenging and gratifying despite the absence of cure or a robust pharmacologic treatment. Primary focus is on long-term amelioration of associated behavioral and neurological problems. The cholinesterase inhibiters such as donepezil, rivastigmine, galantamine are the drugs, approved by US Food and Drug Administration, acts by inhibition of cholinesterase; raising cerebral levels of acetylcholine. Memantine blocks over excited N-methyl-D-aspartate channels. Antioxidants selegiline, α-tocopherol (vitamin E) are also used. Recently, the extract of the *Ginkgo biloba* has been found to cause modest improvement in cognitive functions in dementia.[32]
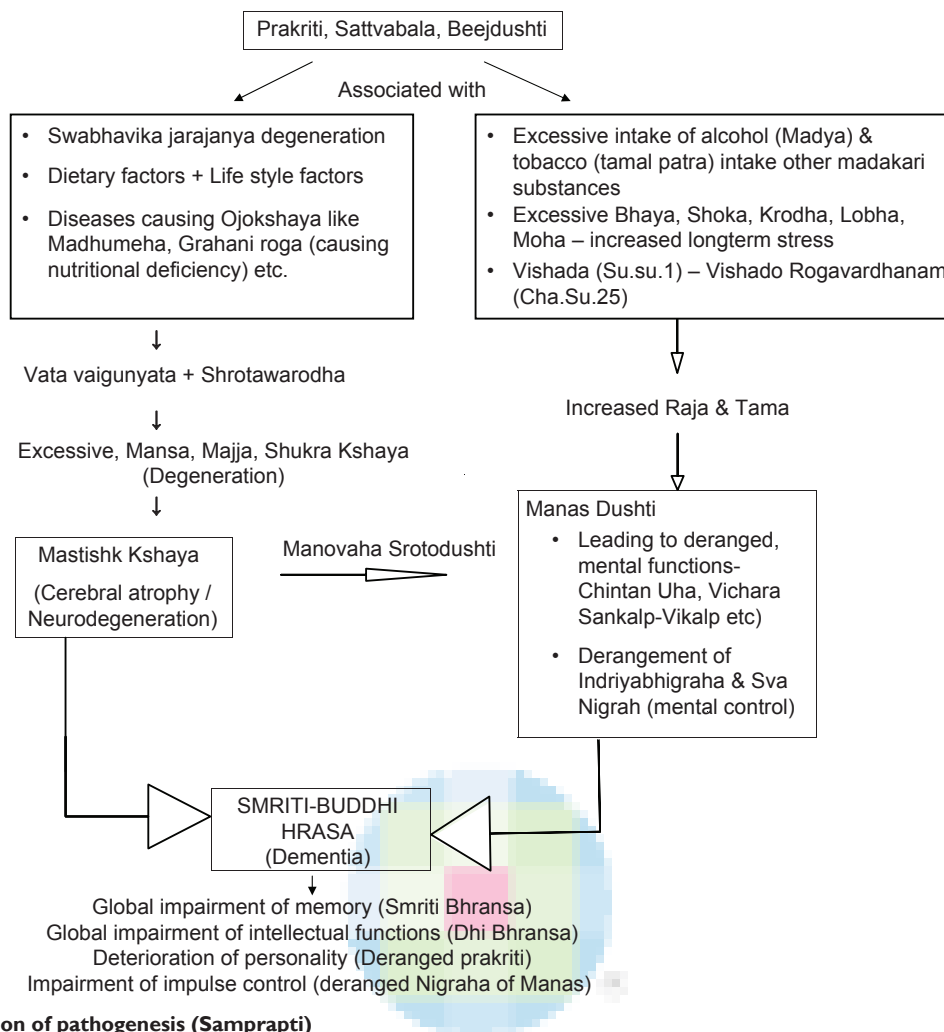
Figure 2: Formulation of pathogenesis (Samprapti)

Many new scientific studies have been conducted showing that the Ayurvedic *Rasayana* therapy is very useful in the management of dementia and other neurodegenerative disorders. Ayurveda believes that *Manas* and *Indriyas* are *Panchbhautika* as well as *Ahankarika* (*Ubhayatmaka*) hence *Dravya* and *Adravyabhootchikitsa* both should be applied in the management of mental disorders. *Sattvavajaya* is a component of *Adravyabhootchikitsa* described for management of mental disorders. *Rasayana* therapy[33] comes under the purview of both *Dravya* and *Adravyabhootachikitsa*. Among the *Rasayana* drugs, *Medhyarasayana* are the special class of drugs described for prevention and management of mental disorder and simultaneously managing the consequences of aging.

Though, *Samsodhana* is a prerequisite before *Rasayana* treatment but in dementia because of old age and consequent *Dhatu Kshaya*, *Mridu* and *Snehayukta Sansodhana* such as *Mridu Virechana*, *Sneha Vasti*, *Matra Vasti*, *Shirovasti*, *Nasya*, etc., should be done before starting *Rasayana* therapy.

Based on experience, in several cases of senile and presenile dementia the *Matra Vasti* with *Mahanarayana taila* along with *Shirovasti* using *Brahmi Ghrita*, *Aswagandha* and *Kapikachchu churna*, *Brahmi Vati* (*Swarna yukta*), *Saraswatachurna* and

Smritisaga rasa are very effective in the management of dementia and can check the progression of disease when started in early stages. They also lead to significant recovery of cognitive functions in many patients. Some important drugs, which are useful in dementia patients are:

- *Shankhpushpi, Mandukparni, Guduchi, Madhuyasti, Vacha, Brahmi, Aswagandha, Kapikacchu, Shatavari, Amalaki, Vatada, Tagara, Jatamansi, Kustha, Silajatu Nagbala*, etc., are useful as single medication with significant utility without any side effect in appropriate doses.
- *Saraswatachurna*, is useful as compound medication in powder form. Having high content of *Vacha*, it should be given, in the dose of 1.5 g thrice daily along with *Ghrita* and honey, preferably after meals.
- *Brahmivati, Medhyavati, Smritisagararasa, Vrihatvatchintamanirasa* etc., are used in *Vati*/tablet form. Most of these compounds having high content of *Medhya* drugs are extremely useful in neurodegenerative disorders like dementia on long-term use.
- *Chyavanprash, Brahmarasayana, Amlakavalehya* etc., are useful *Rasayana* drugs having potential immunomodulator and tissue regenerative property.
- *Aswagandharista, Saraswartarishta*, etc., are fermented

medications useful for patients having reduced appetite and disturbance in sleep.

- *Brahmighrita, Saraswataghrita, Mahapanchagavyaghrita, Kalyanakaghrita, Dasamolaghrita* etc., are extremely nutritive, rejuvenative and regenerative, preparations for nervous tissue.

Among all these formulations *Ghrita* is very important especially the *Goghrita* which causes rejuvenation and nutrition of *Mastishka a* (brain); hence, *Goghrita* should be used as *Anupana* of all the *Medhya* medications.

Scientific validation of some *Medhyarasayanas* in dementia, memory impairment and neurodegeneration

Ashwagandha (*Withania somnifera*) was reported to possess neuritic regeneration and synaptic reconstruction activity (induced by Withanolide-A (WL-A) isolated from root of *Ashwagandha* (*Withania somnifera*)) in mice. It was also shown to prevent the formation of beta amyloidal plaques. WL-A is therefore an important constitute for the therapeutic treatment of neurodegenerative diseases as it is able to reconstruct neuronal networks.[34] The study conducted showing effect of this plant drug on mental and physical health of elderly volunteers measuring the impact through a standardized biological age scale, brief psychiatric rating scale for mental health and immediate memory span test using fine powder of *Ashwagandha* roots in the dose of 5 g twice-a-day for 6 months orally in elderly persons (>60 years).[35]

Brahmi (*Bacopa monnieri* Linn.), is a famous *Medhyarasayana* drug, which has been studied extensively for its memory enhancing effect. A study conducted for the chronic effects of an extract of *B. monnieri* (Keenmind) on cognitive function in healthy human subjects and found that *B. monnieri* may improve higher order cognitive processes that are critically dependent on the input of information from our environment such as learning and memory.[36] This drug also reported that it reduces amyloid levels in mice expressing the "Swedish" amyloid precursor protein and M146L presenilin-1 mutations.[37]

Sankhapushpi (*Convolvulus pluricaulis*), is reported to possess anxiolytic and memory enhancing and mood elevating effect and is claimed to retard brain aging.[38,39] *Mandukaparni* (*Centella asiatica*) was also reported to possess anxiolytic and memory enhancing effect.[40]

An open trial of *Mandukaparni* in cases of educable mental retardation was conducted and was claimed significant improvement in performance IQ, social quotient, immediate memory span and reaction time. The psychomotor and cognitive functions were measured using (1) bhatia battery for performance test of intelligence and memory, (2) Vineland social maturity scale for behavioral and social adaptability. The drug was administered in the form of whole plant fine powder in the dose of 2.5g twice-a-day orally for 6 months.[41] *Kapikacchu* (*Mucuna pruriens*) is a *Rasayana-Bajikarana* plant drug. It is frequently used for the treatment of Parkinson's disease and depressive illness in elderly persons. On phytochemical studies *Mucuna pruriens* seeds have been shown to contain significant quantity of L-Dopa, which could be the basis for its anti-parkinsonism effect.[42] Glycowithanolides isolated from *Withania somnifera* was reported to possess anxiolytic activity.[43] Recently, a randomized control double-blind, cross over study conducted to clinically assess the *Rasayana* effect of a standardized extract of *Brahmi* (*Bacopa monniera*) in adult human volunteers. In this, participants were randomly allocated one of the two treatment conditions: bacosides enriched standardized extract of *Bacopa monniera* (BESEB-CDRI-08) (*n* = 41) or an identical capsule placebo (*n* = 13). After 6 months, the volunteer were switched to alternate treatment (cross over) and found that BESEB-CDRI-08 significantly improved in anxiety, sleep abnormality and decrees in glucose level etc.[44]

Thus, the *Medhyarasayana* drugs such as *Ashwagandha, Brahmi, Mandukaparni, Sankhapuspi, Kapikacchu* and several other such herbal and herbo-mineral drugs are very useful in the management of dementia and other neurodegenerative disorders. Besides textual and experience-based evidence for their efficacy now several new scientific studies have been conducted showing interesting results. Conceptually, it is held that all *Rasayana* drugs produce their effect by acting through nutrition dynamics (*Rasa, Agni, Srotas*) at molecular level. They may not possess sharp pharmaceutical activities if used in holistic form and hence as such they may be treated as soft and safe medications, which are the popular professional demand in present times.

Conclusion

Dementia seems to be a *Yapyavyadhi* (palliative condition) as per Ayurvedic understanding of its pathogenesis. Early detection of the problem and early starting of the treatment is required to prevent the progress of the disease. Ayurvedic approach to management with *Medhyarasayana* and *Panchkarma* therapy is useful in the treatment of dementia and effective in improving not only the quality-of-life of the patient, but also the care givers/family members in broader sense. Based on our experience in several cases and evidences from scientific studies on *Medhyarasayanas* it can be stated that, Ayurvedic medications and therapeutic techniques for the management of neurodegenerative diseases especially dementia are very effective if used judiciously, which are still a grey area in conventional medicine.

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हिन्दी सारांश

स्मृति बुद्धि ह्रास (डिमैंशिया) की आयुर्वेदिक अवधारणा का विवेचनात्मक विश्लेषण

राघेश्याम तिवारी, जे. एस. त्रिपाठी

स्मृति बुद्धि ह्रास (डिमैंशिया) एक चिरकारी व्याधि है जो मुख्यतः वृद्धावस्था में होती है । इसका मुख्य लक्षण स्मृति तथा समस्त बौद्धिक क्षमताओं का लगातार ह्रास होना है जोकि अपरिवर्तनीय होता है । इसकी लगातार हो रही वृद्धि को रोकने के लिए परम्परागत चिकित्सा पद्धति में अभी तक कोई विशिष्ट समाधान नही खोजा जा सका । आयुर्वेद शास्त्रावलोकन करने पर बुद्धि, स्मृति, प्रज्ञा के सिद्धान्त तथा बुद्धि मेधाकर योगो का वर्णन मेध्य रसायन प्रकरण में विस्तृत रूप से मिलता है । प्रस्तुत लेख में इन सभी तथ्यों को एकत्रित करके इस रोग की आयुर्वेदीय सम्प्राप्ति की परिकल्पना की गयी है । तथा इन तथ्यों एवं अपने अनुभव के आधार पर रसायन तथा पंचकर्म चिकित्सा विधि के द्वारा स्मृति, बुद्धि ह्रास (डिमैंशिया) की प्रभावी चिकित्सा का बृहद विवेचन किया गया है ।