

Effect of an Ayurvedic *Medhya Rasayana* Therapy on Age Associated Memory Impairment

Kulatunga , R. D. H.

Introduction

Population ageing has become an important demographic issue in the 21st century in both developed and developing countries in the world. Ageing is associated with physiological functional and pathological changes affecting physical, mental emotional and social well being (UNFPA, 2004). It is observed that mental ill health has been increasing among elderly individuals due to many stressors such as decreasing functional capacity and social isolation (Steyn & Fourie, 2006). Prevalence data for mental disorders in elderly persons estimate that 25 percent have significant psychiatric symptoms (Sadock & Sadock, 2007).

Brain Ageing and Ayurveda

Hippocampus is a significant site for formation and storage of immediate and recent memories in the human brain (Sadock & sadock, 2007). Neuropathological studies show that during normal ageing, the hippocampus loses some of its neurons up to 20%-30% by the age of 80 years. These findings suggest that forgetfulness in elderly individuals might at least in part be due to hippocampus dysfunction (Squire, 1987). Hence the mental and neurological manifestations often form the hallmark of senility. In Ayurveda those facts have been categorically described as the psyche- brain deficits which occur in the fourth and ninth decades of the hundred year's life span in terms of loss of medha (intellect) and buddhi (wisdom) respectively (Singh, 2008).

Importance of *Medhya Rasayana* in Ageing

In Ayurvedha the rasayana therapy defined as a rejuvenation measure which prolongs longevity develops positive health and improves mental faculties and provides resistance and immunity against diseases (Singh, 2003). Though the rasayanas are generic rejuvenative remedies, some of them are specific to the brain and nervous system and are called medhya rasayana. Recent research advances have revealed that medhya remedies of ayurvedha

could prove to be a potential source for developing a new class of neuronutrients with cognition, memory enhancing and neuro- regenerative effects.

In view of the above literary views and ideas the present study has been focused on evaluating the following objectives.

Objectives of the study

- to identify the efficacy of guduchayadi medya rasayana on age associated memory impairment.
- to study the impact of etiological factors on age associated memory impairment among elderly individuals.

Methodology

Patients of the age group of 55-75 years having symptoms of memory impairment were selected from the outpatient department of The Department of Kayachikitsa at the Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University Jamnagar in India irrespective to their sex, caste, religion, occupation etc for this study. A purposive sampling technique was adopted.

Criteria for Exclusion

- Patients with evidence of intracranial hemorrhage, brain tumors, uses of psychotropic drugs, Diabetes mellitus etc.
- Age < 55 and >75 years.

Investigations

- Routine hematological and biochemical tests were carried out
- Serum Acetylcholine Esterase (AChE) estimation

Drug selection and posology

Trial drug Guduchayadi Medhya Rasayana (GMR) is a poly herbal formulae having eight ingredients (Yogaratakara, 2002) and control drug Sarkaradi (SG) both were prepared as granules. Patients of group A received Guduchayadi Medhya Rasayana while, group B received Sarkaradi Granules.

Criteria of assessment

Effect of medhya rasayana drug on memory was assessed as subjective and objective criteria's before and after the treatment.

Subjective criteria

Appropriately prepared scoring methods ranging from 0-4 have been used for improvement of signs and symptoms while mini mental state examinations used for assessment of cognitive state (Swash & Glynn, 2007).

Objective criteria

Hematological and biochemical parameters were carried out. Further, based on the subjective and objective parameters before and after the treatment those patients were graded into 5 groups in order to assess the overall therapeutic efficacy.

Statistical analysis

The obtained data were analyzed using the paired and unpaired 't' tests.

Key Findings

In the present study total 138 patients were registered and 72% completed the treatment while 28% discontinued the treatment . Majority (60.8%) of the patients belonged to 55-64 years age group and majority were females (60%). Most all the patients were having memory impairment. But the majority of the patients (100%) were suffering from impairment of short memory while 80.4% were having impairment of long memory.

It is observed that living environment within a family affects the status of elderly patients and 26 percent of elders were experiencing lack of attention from their children and 13.7 percent living within family conflict situation while, 13 percent living alone.

In this study various etiological factors were observed. majority of patients reported excessive thoughts (92%) followed by anger (83.3%) , worries (70.2%) , anxiety (64.4%), fear (51.4%) and also intake of dried food (55.7%) and insomnia at night (87%) etc.

Effect of therapy

Considering the symptoms of memory impairment along with cognitive declines the comparative effect showed statistically significant results with guduchayadi medhya rasayana for majority symptoms because some ingredients of the trial drug *shankapushpi* (*convolvulus pluricaulis chois*) is a prime intellect promoting rasayana drug. Moreover, recent research advances reported that shankapushpi possess anxiolytic, memory enhancing and mood elevative effects (Singh, 2008). Moreover, pharmacological actions have revealed that *Shankapushi* (*Convolvulus Pluricaulis Chois*) and *vacha* (*Acorus Calamus Linn*) both have sedative and tranquillizing effects. So these potentials have benefited to better relieve anxiety, depression and sleep disturbances.

In this study the mini mental state examination was used to make a base line assessment of a patient's cognitive performance. So 14.89 percent of improvement has been obtained by medhya rasayana while, 11.62% by control drug and both effects was highly significant at the level of $p < 0.001$. The comparative effect was statistically significant at the level of $p < 0.05$. It may be due to medhya rasayana effects of the drug through regeneration of neural tissues, adaptogenic and memory enhancing properties.

In the present study serum acetylcholine esterase has been considered as a bio – marker of senile memory imparment. It is observed that AchE level is in the upper range in both the groups before treatment. After providing treatment both levels have decreased. The reduction is 3.67 percent of the trial group and it was statistically significant at $p < 0.05$ and 1.75 percent of the control group and it was statistically insignificant as well. Scientists believe that dementia related memory issues stem from the increased breakdown of acetylcholine due to a preponderance of acetyl cholinesterase which degrades acetylcholine.

Further, a recent scientific study has revealed the cognitive enhancement and neuroprotective effect of *celastrus paniculatus* wild seed oil u male wistar rats. A decrease in AChE activity was noted in the treated animals leading to increase cholinergic activity in the brain. Hence based on these evidences it can be stated that significant reduction of AChE in group A revealed that the trial drug has the effect of enhancing memory through

increased cholinergic functions by reducing acetyl choline breakdown of the ageing human brain.

Conclusion

Literature revealed that age associated memory impairment is closely associated with cognitive decline during ageing and reduction of brain volume, neuronal losses, and disruption of regional blood flow are having positive relationship with cognitive decline in ageing. Ayurvedic literature review has emphasized that especially medhya rasayana benefited the Dhi (intelligence) Dhriti (power of retention) and Smriti (power of memory).

Demographically data observed of the elderly show that they are passing through a critical stage characterized by *Chinta* (thoughts 92%) , *Krodha* (anger) , *Shoka* (worries) *Chittodvega* (anxiety) , *Bhaya* (fear) *Moha* (Illusions) ,*Ratri jagarana* (awaking at night) and these factors give strongly support the development of age associated memory impairment .

On the basis of the clinical study, Guduchayadi medhya rasayana provided statistically highly significant improvements on short memory (62.59%) as well as long memory impairment in age associated memory impairments at $p < 0.001$. Further, Guduchayadi medhya rasayana has showed anxiolytic, antis tress, cognitive enhancements and haemopoietic potentials compared to the control drug. It is suggested to encourage the medical practitioners, drug manufactures to produce mental health promotive drugs for elders. Counseling programs should be lunched for psychological relaxation for elders. The provision of special health care viz Geriatrics & Mental Health is also seen as essential. It has been observed that applications of some scales so as to measure the memory power and other symptoms among persons who are illiterate or below the certain standard of education, the result obtained seems to be inaccurate. Therefore new techniques have to be adopted in place of scaling up of their answers to get more realistic picture of illiterate elderly persons.

Key words: Ageing; Medhya Rasayana; Senile Memory Impairment.

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