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An interrelation between mild cognitive impairment and acid reflux syndrome

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Abstract
In Ayurveda it is said that decline in Medha starts at the 4th decade of life. Level of cognition also depends up on prakruti, sara, satva of the person. Decline in cognition, memory impairment is commonly related to aging, and it can be treated, prevented up to some extent with special type of medicine i.e. Rasayan. Also there are evidence suggesting that older adults retain considerable neural plasticity and thus the ability to enhance neural functions as a result of specific experiences, interventions in middle to old age. Considering above truth, the rasayana treatment become more important as far as medical interventions for the said problem is concerned. Various Medhya rasayana drugs are mentioned in the classics, and lot of research work has been carried out on these herbs to rule out and specify their psychoneuropharmacological promoting effects.

Keywords: mild cognitive impairment, nirgundi kapla, amlapitta, acid reflux syndrome

1. Introduction

1.1 Background

The problem of aging is global one in the sense it is experienced by all the countries. In India, also with improved health care facilities and standard of living, life expectancy is going up. It has risen from 57 yrs. in 1990 to 65yrs. today. The present number of senior citizens in India is 65 million but is expected to cross 177 million by the year 2025. It is clear that as people age they show decline in tasks that are markers of fluid intelligence. The differences in the course of age related decline are observed across different studies, it is clear that even healthy adult experience some decline in fluid abilities with advanced age, although the age at which deflection occurs is variable [1, 2]. Cognitive decline is often taken as granted by both public and health care practitioners at large. Progressive cognitive decline which usually becomes noticeable in middle age, has been ignored as part of getting old, as many people age into their 90s only with modest loss of mental skills [3].

In the individual showing measurable cognitive decline, failure to positively intervene can prove disastrous as abnormally lowered cognitive performance during the sixth decade has been linked to increased risk of dementia [4]. Age Related Cognitive Decline (ARCD) is the diagnosis reserved for abnormal cognitive function less severe than dementia in persons older than 50yrs.The worst cause of ARCD, are at higher risk for dementia, as are with subjects of MCI [5]. MCI is the clinical condition between normal aging and Alzheimer's Disease in which person experiences memory loss to a greater extent than one would experience or expect for age, yet they do not meet currently accepted criteria for clinically probable AD [6].

Subject of MCI will enviably get Alzheimer's in their lifetime is not always true, but these subjects are more prone to it. Amnesic MCI and multiple domain MCI are two types of MCI, which may progress to dementia, AD. Criteria for amnesic MCI includes impaired memory function for age and education, preserved general cognitive function, intact activities of daily living and no dementia [7].

There is no prospective study of MCI in India. But the researchers have pointed that MCI occurs in about 20% of elderly individuals. One research study shows that overall prevalence of MCI is 14.89%. It is well documented that as age increases there is decline in cognitive ability and memory. Conversion rate of MCI to AD is 12% [8].

In Ayurveda it is said that decline in Medha starts at the 4th decade of life. Level of cognition also depends up on prakruti, sara, satva of the person. Decline in cognition, memory impairment is commonly related to aging, and it can be treated, prevented up to some extent with special type of medicine i.e. Rasayan [9]. Also there are evidence suggesting that older adults retain considerable neural plasticity and thus the ability to enhance neural functions as a result of specific experiences, interventions in middle to old age [10, 11]. Considering above truth, the

rasayana treatment become more important as far as medical interventions for the said problem is concerned. Various Medhya rasayana drugs are mentioned in the classics, and lot of research work has been carried out on these herbs to rule out and specify their Psychoneuro pharmacological promoting effects. Nirgundi is one of the Medhya drug and clinical trials on 'Role of Nirgundi kalpa in Mild Cognitive Impairment w.s.r. to amnesic MCI' are going on in BVDUCOA, Pune. since 2011.

Here in this paper I would like to share views about the relationship of MCI with Acid Reflux Syndrome. This Acid Refiux Syndrome comprise of various types of Gastro eosophagial Reflux Diseases (5) like Gastritis [6], Dyspepsia [7], Heartburn [8], peptic ulcer [9], Hyperacidity [10] etc. described in modern sciences. The term Acid reflux syndrome may be correlated with Amlapitta [4]. During this study while recruiting the patients for the trial it is observed that many patients of MCI were suffering from Amlapitta also. Amlapitta is not only the disorder caused by habitual, irregular diet schedule activities, but also as a result of physiological and psychological aberrations. So in this paper it is tried to find out an association between MCI and Amlapitta in elderly patients. Along with Amlapitta, rasadushti, rasakshaya, Pandu lakshana were also observed in these patients.

From the observations it is hypothesized that Acid Reflux Syndrome or Amlapitta may be responsible for MCI.

Amlapitta disease is related to rasadushti. Rakta dhatu also plays very important role in Amlapitta. Considering sign and symptoms of Amlapitta [12, 13] and expert opinion of ayurvedic vaidyas, conditions like gastritis, gastritis due to H. pylori infection, hyperacidity, gastric atrophy, peptic ulcers, gastric CA etc. can be included in Amlapitta. In progressive stage samprapti may spread to other sites causing different diseases or symptoms other than pertaining to Amlapitta, eg. Pandu /Anemia [13].

Several studies have been done, suggesting the association between MCI and Hypertension, Diabetes mellitus and old age [14]. Association between MCI and H. pylori infection and AD has been proved by research study [15]. Several studies have suggested that gastrointestinal disorders influence negatively the cognitive impairment [16, 17]

Most of the time H. pylori infection is asymptomatic. In India prevalence of H. pylori infection is high and the frequency of the disease increase with age [18]. H. pylori causes chronic gastritis, peptic ulcers etc. [19, 20] and it is highly associated with iron deficiency and iron deficiency anemia [21]. Cognitive development is associated with iron deficiency and iron deficiency anemia [22, 23]. Amlapitta also shows lakshana of Pandu in late stage [24]. However the association between cognitive impairment and Amlapitta was either not assessed or if assessed published data is not available.

Aim of the study here is to find out the association between MCI and Amlapitta or Acid Reflux Syndrome in elderly patients.

2. Material and methods

In the current study patients of 40-80yrs. age group were selected. Total 75 pts of MCI were registered irrespective of sex, socio economical conditions and occupation. Patients having memory complaint, whose MMSE score is between 22-27, who are not depressed or mildly depressed on GDS scale were selected. Patients having major psychological or neurological disease, having hypothyroidism, HIV infection, malignancy, uncontrolled diabetes mellitus were excluded. Laboratory tests like Hemogram, Blood Sugar level-Random, Blood urea level, Serum creatinine, Urine -Routine, ECG, Tridot for HIV were done prior to the study. Site of the study is BVDUCOA hospital, Pune. BVDUCOA ethical committee approval was taken prior to the study. Patients were registered only after written informed consent (ICMR guidelines). Special CRF is formed for the study. Sign, symptoms of Amlapitta mentioned in Madhav nidan and Kashyap samhita were referred for the diagnosis of Amlapitta [25, 26].

2.1 Data Collection

Patients of age group 40-80 yrs. having memory complaint were screened for memory impairment. If MMSE was "between" 22-27 and patient is not depressed or mildly depressed on GDS scale, he was sent for pathological investigations. After this the includable patients were selected and included in the trial only after written consent. Special CRF incorporating all the relevant points from Ayurved as well as modern medicine view was prepared. Information was obtained from the patients as well as the relatives or care taker of the patient.

2.2 Detection of MCI

Cognitive function was assessed with the help of ACE-R test. ADL and IADL were assessed on ADL and IADL scale.

2.3 Detection of Amlapitta

Amlapitta was diagnosed according to sign, symptoms mentioned in Madhav nidan and Kashyap samhita through personal interview.

3. Results

Among 75 MCI patients registered, 40 patients had Amlapitta i.e. 53.33% were suffering from Amlapitta. Maximum 75% were female patients.

Max.90% patients were married.Max.62.5% patients were working. Max.80% patients were from middle socio-economical class.Max.75% were of vata kapha pradhan prakruti.Max.65% were following viruddha ahar like backeri products with milk, tea with chapati, pharsan items with tea/coffee, stale food. Max.50%were having abhishyandi diet like curds in excess.Max.45% patients had a habit of drinking much water during food considering that it will relieve constipation.Max.52.5% patients had the history of vegvidharan-suppression of natural urges like defecation, micturation. Max.47.50% patients had habit of awakening late night in their early years. Max.92.5% patients had completed primary education.

Max.77.50% was having anxiety, anger.Max.22.5% was found to be greedy for money.Max.45% patients were having chronicity of Amlapitta for more than 6 yrs.Max.47.5% patients were having chronicity of Amlapitta for more than 3-4 yrs.Max.65% had sedentary type of working style. Max.50% patient had disturbed sleep at night. Max. patients 65% were found to have Raj guna pradhan nature. Remaining were had Tama guna pradhan nature.Most of the patients i.e.72.5% were having hemoglobin % between 10-11.Rest of the patients had hemoglobine %between11-13.

4. Discussion

Association between MCI and Amlapitta among the elderly people was assessed. It is found that Amlapitta is associated with MCI. Amlapitta pathphysiology may contribut, to the patho physiology of MCI.

Research has shown the association between H.pylori infection and MCI [27].

Amlapitta is the rasashrayee disease. Increase in amla, ushna, tikshna, vidahi charachteristics of pitta is responsible for depletion of drava, chala, sheeta guna of the rasa dhatu, resulting in the increase of vata pitta dosha again. Depletion of rasadhatu leads to deterioration of its nourishing and supporting function to the tissues i.e. preenan, tarpana, dharana [28]

Depletion of rakta dhatu may take place in elderly because of rasavidagdhta leading to depletion in jeevan (tissue oxygenation), pooran (tissue nourishment), spandan functions of rakta. Due to Amlapitta and increased age some factors like kleda, sneh, proper ushma in amashaya decreases leading to improper digestion and metabolism. Agnisada and decline of above factors reduces the absorption, metabolism, assimilation reducing the preenana, tarpana jeevan functions of the brain as well as whole body. Because of rasadushti, mala kapha vitiates. Due to its guru, manda, sthira, shlakshna guna, obstruction takes place in srotasas depleting the chala guna of rasa. All this results in to reduced indriya tarpana and impaired cognition. Medhajanan function of pitta and smriti function of kapha decreases.

Functions of brain receptors for cholecystokinin, endorphins serotonin and olfactory functions have to be found declining with age [29]. Prevalence of atrophic gastritis with hypochlorhydria or achlorhydria is 24% in 60-69 yrs. old people, and 37% in people above 80 yrs [30]. H.pylori may increase the risk of malnutrition, iron deficiency anemia leading to cognitive impairment or MCI or AD [31, 32, 33]. H.pylori-gastritis results in reduced absorption of vitamin B12, folate leading to increased homocysteine levels [34, 35].

Plasma homocysteine increases with age, irrespective of vitamin levels in the body [36]. High homocysteine is a risk factor for cognitive impairment in adults [37, 38, 39]. Study shows that atrophic gastritis results in increased pH in the stomach and small intestine resulting into limited folic acid absorption [40], vitamin B12, B6 and folate have direct effect on memory and cognition [41].

Association between MCI and Amlapitta is found in this study. Although the role of exact duration of Amlapitta on MCI was not examined. Hemoglobin level was assessed to rule out anemia. Positive relation was found in the MCI and Pandu /anemia lakshanas. We restricted the age of samples to40-80 as MCI is commonly found in elderly. Rasadushti and rasakshaya is the common factor found in the pathogenesis of MCI, Amlapitta and Pandu.

Limitations of the study were the small sample size and lack of some pathological investigations like B12 level, serum homocysteine level, H. pylori antigen test for diagnosis and association purpose.

5. Conclusion

Findings indicates Amlapitta or Acid Reflux Syndrome is associated with MCI, independent of socioeconomic, educational and nutritional status. Further scope is there to confirm the results with larger samples and some pathological investigations.

5.1 List of abbreviations

MCI-Mild cognitive impairment, AD- Alzheimer's disease, H.pylori—Helicobactor pylori, yrs—years, MMSE—Mini mental screening test, GDS-Geriatric depression scale, ACE—R –Addenbrook's cognitive examination revised, ADL—Activities of daily living, IADL—Instrumental activities of daily living, MAX.—Maximum, BVDUCOA--Bharti Vidyapeeth deemed university college of ayurved, CRF-- Case report form

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