Review of new therapy outlooks and challenges in Alzheimer’s

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**Purpose**

- To understand of biological mechanism during formation of Alzheimer’s Disease.
- Search the possible biomarkers that can be involved in major pathology.
- Identify the research based ideology to utilize for further investigation guiding treatment modalities for Alzheimer’s Disease.

**Background**

- Alzheimer can be more debilitating health issue with high medical expenditures resulting from the need for long-term management.
- The importance of nutrition in preventing or delaying cognitive disorders in the elderly populations has received great attention.
- On long term, nutrition maintenance can be a potential intervention among the elderly population to delay the development of Alzheimer’s.
- Alzheimer’s disease is currently ranked as the 6th leading cause of death in the United States, 65 or older, may have dementia caused by Alzheimer’s (WHO, n.d).
- Alzheimer’s disease includes brain imaging of amyloid β aggregation and hyperphosphorylation of tau protein.
- Estimates vary, but experts suggest that more than 5.5 million Americans, most of them age 65 or older, may have dementia caused by Alzheimer’s (WHO, n.d).
- Alzheimer’s disease is currently ranked as the 6th leading cause of death in the United States, but recent estimates indicate that the disorder may rank 3rd , just behind heart disease and cancer, as a cause of death for older people (NIA,NIH.Gov, n.d).

**Diagnostic Criteria**

**What is a biomarker?**

- Biomarkers, such as those sought for Alzheimer's disease, are benchmarks in the body that can be reliably measured to indicate the presence or absence of a disease, or the likelihood of later developing a disease (strimbu k, 2010).
- The strongest biomarker candidates for Alzheimer's disease include brain imaging studies using magnetic resonance imaging (MRI) or positron emission tomography (PET), and proteins in cerebrospinal fluid (CSF) (Early diagnosis, n.d).

**Findings**

- In AD, Biomarkers have included amyloid β (Aβ), total tau (t-tau), and phospho-tau (p-tau) (WHO icd 10, 1992). In AD, the concentration of Aβ42 in cerebrospinal fluid is low and that of t-tau is high compared with those in healthy controls (Motter R, 1995).
- Combinations of abnormal markers (low Aβ42, high t-tau, high p-tau 181) reached a hazard ratio of 17 to 20 for predicting AD in a follow-up of 4-6 years.47 Sensitivities and specificities in this study were >90% and >85%, respectively (Hansonn, 2006).
- The major goal for the AD drug discovery is to slow or stop the cascade of neurodegenerative change characterizing the disease.
- Information of nutrition towards the biomarker was collected from previously conducted studies to find the burden of various nutrients on biomarkers of Alzheimer’s.
- Higher content intake of vitamin B12 and folate associated to glucose metabolism with beta coefficient of 0.35(P<0.001) and vitamin B12 shows negative association with PiB (biomarker related to amyloid plaques) with beta coefficient -0.32(p<0.006).
- These associations with high intake of proper nutrients are related to better cognitive functioning and lower Alzheimer’s disease risk in the elderly (L. Mosconi et al, 2014).
- There has been a lot of research into the usefulness of AD-specific biomarkers that are reflective of the central pathogenic processes of amyloid β aggregation and hyperphosphorylation of tau protein.

**Summary and future studies**

- Treatment of Alzheimer’s disease has been palliative with medications of dementia that help in mood swings, increase blood pressure and improve mental function.
- Nutritional effect on preventing the growth of biomarkers may be a substantial reason to delay the formation of amyloid plaques.
- Further studies are needed on human trials to reach a potential treatment formulation. But a success can bring in delaying the formation of Alzheimer’s disease which can increase the quality years of life of millions of the geriatrics.

**References**


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