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## Mini Review

## Alzheimer's Disease -

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Alzheimer's Disease (AD) is defined as progressive neurodegenerative disorder, and the most common cause of dementia in old-age people. Intracellular Neurofibrillary Tangles (NFTs) and extracellular amyloid protein deposits (plaques) are the microscopic diagnostic findings. Accumulation of Amyloid  $\beta$  peptide (A $\beta$ ) plaques in the cerebral blood vessels is known as Cerebral Amyloid Angiopathy (CAA). Traditionally, AD is considered a distinct disorder in which intensifying loss of neurons and synapses proceeds in distinct anatomical loci, resulting in specific clinical symptoms [1].

The important characteristics feature of the AD brain is cortical atrophy, commonly diffuse throughout the cerebral hemispheres. Cortical atrophy is usually accompanied by enlargement of the ventricular system, or hydrocephalus ex-vacuo, and shrinkage and atrophy of the subcortical white matter [2].

Alzheimer's disease is characterized by a gradual decrease in the cognitive function, which includes a decline in recent memory, learning and thinking capacity and it is significantly increased among people above the age of 65 years. The disease often begins with minor symptoms and ends with severe brain damage or even death. Death of patient with AD usually results from general starvation, malnutrition, and pneumonia [3].

AD can be categorized into four different stages. The first stage is the Mild Cognitive Impairment (MCI), and shows a range of symptoms (usually amnesia) which does not alter daily life significantly. The later stages of Alzheimer's disease (mild and moderate AD) are characterized by marked cognitive deficits and a decline in independence, culminating in the patient's complete dependence on caregivers and a complete deterioration of personality (Severe AD). The extent and placement of tangle formation correlates well with the severity of dementia, much more so than numbers of amyloid plaques [4].

Every patient with AD experiences the disease differently, but people tend to experience a similar tragedy from the beginning of the illness to its end. The precise number of stages of Alzheimer's is somewhat arbitrary. Some experts use a simple three-phase model (early, moderate and end) [5]. The most common system, developed by Dr. Barry Reisberg of New York University [6], divided the progression of Alzheimer's disease into seven stages. This framework for understanding the progression of the disease has been adopted and used by a number of healthcare providers as well as the Alzheimer's Association.

#### Stage 1: No Impairment

During this stage, Alzheimer's is not detectable and no memory problems or other symptoms of dementia are evident other than people of the same age.

#### Stage 2: Very Mild Decline

The patient may recognize minor memory problems or lose things around the house, although not to the point where the memory loss can easily be distinguished from normal age-related memory loss. The person will still do well on memory tests and the disease is unlikely to be detected by physicians.

#### Stage 3: Mild Decline

At this stage, the family members and friends of the patient may begin to notice cognitive problems. Performance on memory tests is affected and physicians will be able to detect impaired cognitive

function. People in stage 3 will have difficulty in many areas including: Finding the right word during conversations, organizing and planning, remembering names of new acquaintances. Patients with stage 3 AD may also frequently lose personal possessions, including valuables.

#### Stage 4: Moderate Decline

In this stage of Alzheimer's, clear-cut symptoms of the disease are apparent. People with stage four of AD have difficulty with simple arithmetic, poor short-term memory (may not recall what they ate for breakfast, for example), inability to manage finance and pay bills and may forget details about their life histories

#### Stage 5: Moderately Severe Decline

During this stage of AD, people begin to need help with many day-to-day activities. People in stage five of the disease may experience difficulty dressing appropriately, inability to recall simple details about themselves such as their own phone number with significant confusion.

On the other hand, people in stage five maintain functionality. They typically can still bathe and toilet independently. They also usually still know their family members and some detail about their personal histories, especially their childhood and youth.

#### Stage 6: Severe Decline

People with the sixth stage of AD need constant supervision and frequently require professional care. Symptoms include confusion or unawareness of environment and surroundings, inability to recognize faces except for the closest friends and relatives, inability to remember most details of personal history loss of bladder and bowel control, with major personality changes and potential behavior problems

They need assistance with activities of daily living such as toileting and bathing as they may be seen wandering.

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#### Stage 7: Very Severe Decline

Stage seven is the final stage of Alzheimer's. Because the disease is a terminal illness, people in this stage are nearing death as they lose the ability to communicate or respond to their environment. While they may still be able to say words and phrases, they have no insight into their condition and need assistance with all activities of daily life. In the final stages of Alzheimer's, people may lose their ability to swallow.

The diagnosis of definite Alzheimer's disease requires a postmortem brain examination and the demonstration of numerous senile plaques and neurofibrillary tangles in hippocampal and association cortical areas. Very Severe Decline

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