Alzheimer's Disease/Dementia

As baby boomers age and the senior population swells, more people than ever before are faced with the impact of aging on the brain. Loss of memory and thinking ability is one of aging's most tragic consequences. Without memory, we lose our sense of identity and relationship to the world around us. A haunting song about aging recorded by Simon and Garfunkel in the 1960s ends with the words: "Preserve your memories,they're all that's left you." How sad that so many people spend their final years with few memories left intact.

Senile dementia is the medical term for senility, the gradual loss of mental function that so often occurs with aging. Alzheimer?s disease,the most common form of senile dementia, accounts for more than 60 percent of the cognitive function disorders in the aging population.

Alzheimer's disease is a progressive condition that results in a slow deterioration of memory, reasoning, and behavior. The loss of intellectual function interferes with daily life, and after a disease course that may last many years, eventually results in death. Death is usually due to factors such as malnutrition, complications of the immune system such as pneumonia or infection, injury, and even choking.

Alzheimer's is a debilitating disease that causes severe degeneration of brain tissue. Plaque deposits accumulate in the spaces between brain cells. The cells themselves form twisted, spaghetti-like masses called "neurofibrillary tangles." Why these changes happen in the brains of some people but not others remains a matter of speculation. Scientists are unsure as to which of these abnormalities occurs first, the plaque or the tangles. What triggers them in the first place is not known for certain.

One leading theory involves a protein called "amyloid" that builds up on the surface of brain cells in Alzheimer?s sufferers. An especially sticky form of amyloid protein fills up the plaque deposits observed in Alzheimer?s disease. As the amyloid laden plaque deposits grow, they trigger an inflammatory immune reaction that begins to destroy the surrounding brain neurons. Amyloid synthesis is controlled by an enzyme called "secretase." Researchers are now developing a class of drugs called secretase inhibitors that may be able to inhibit excess production of amyloid in people with Alzheimer's disease.

Another theory centers around a protein called "tau" which functions as structural support for brain cells. Like all neurons, brain cells contain long fibers neatly arranged in bundles that look a bit like cable wire. These fibers contain tiny, tube-like structures called microtubules. Chemical changes cause tau to alter it shape, resulting in distortion of the microtubules. As the microtubules twist and tangle up,the surrounding cells begin to shrink and die, forming the useless "neurofibrillary tangles" which are the distinctive characteristic of Alzhheimer's disease.

Another hallmark of Alheimer's is a decline in production of the neurotransmitter acetylcholine, which regulates many memory-related functions. Heredity may also play a role in some cases.

Past research has implicated aluminum toxicity in the brain as a possible cause of Alzheimer?s disease, but this remains unproven. Animals exposed to aluminum develop both symptoms and brain lesions that resemble those found in patients with Alzheimer?s disease.(7 <#fn105990>) Exactly how aluminum may contribute to the disease has not been determined. Aluminum may cause inflammation in the brain by triggering the formation of cell-damaging molecules called "free radicals." There is evidence that aluminum may be a nerve toxin.

In its beginning stages, Alzheimer?s can be a difficult disease to spot; the changes in memory and behavior are barely noticeable at first. The disease may worsen within the first several years or take as long as twenty to progress. Average survival time after diagnosis is generally four to eight years. Memory loss gradually worsens, along with a decline in ability to perform routine daily tasks. Late stage Alzheimer?s sufferers experience increasing disorientation, impaired judgment, personality changes, difficulty in learning, and a loss of language skills. As yet, there is no cure for Alzheimer's disease.

About the Author

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