Journal of Contemporary Medical Education, 2023
VOL 13, NO. 05, PAGE 01-02

PERSPECTIVE

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Alzheimer's Disease: Preventive measures and Diagnosis

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ARTICLE HISTORY
Received: 02-May-2023, Manuscript No. JCMEDU-23-99608;
Editor assigned: 05-May-2023, Pre-QC No. JCMEDU-23-99608 (PQ);
Reviewed: 19-May-2023, QC No. JCMEDU-23-99608;
Revised: 26-May-2023, Manuscript No. JCMEDU-23-99608 (R);
Published: 02-Jun-2023

Description

Alzheimer's disease (AD) is a neurological condition that typically develops gradually and gets worse over time. It is the root of 60%–70% of dementia cases. The most prevalent initial sign is trouble recalling recent events. Language difficulties, disorientation (including a tendency to get lost easily), mood swings, a lack of desire, self-neglect, and behavioural problems can all be indicators of advanced Alzheimer's disease. As a person's health deteriorates, they frequently isolate themselves from friends and family. Body functions gradually deteriorate, which eventually results in death. The typical life expectancy following diagnosis is three to nine years though the rate of progression can vary. It is unclear what causes Alzheimer's disease. There are numerous genetic and environmental risk factors connected to its development. The most potent genetic risk factor originates from an Apolipoprotein E (APOE) allele. A history of head trauma, severe depression, and high blood pressure are additional risk factors. Amyloid plaques, neurofibrillary tangles, and a loss of neuronal connections in the brain are all major contributors to the disease process. Based on the patient's medical history, cognitive testing, imaging studies, and blood tests to rule out other potential reasons a probable diagnosis is made. Initial symptoms are frequently confused with ageing of the brain. For a certain diagnosis brain tissue examination is required but this can only be done after someone has passed away. Healthy eating, regular exercise, and social interaction are all recognised to be advantageous as people age and may help lower the risk of cognitive decline and Alzheimer's disease.

Prevention

Alzheimer's disease (AD) research has concentrated on strategies to stop the onset and progression of the disease because there are no disease-modifying therapies available to treat the condition. Studies on ways to stop the onset or progression of Alzheimer's have yielded conflicting results and there is no evidence to support any specific prevention strategy. Epidemiological research has suggested links between a person's risk of getting AD and alterable elements including medicine, way of life, and nutrition. Determining whether Alzheimer's disease interventions serve as a primary prevention technique preventing the disease itself or a secondary prevention method recognising the early stages of the disease presents some complications. These difficulties include the length of the intervention, the various disease phases at which treatment begins, and the absence of standardised inclusion criteria for biomarkers specifically related to Alzheimer's disease. To identify elements that can aid in the prevention of Alzheimer's disease, more research is required.

Diagnosis

Only the results of an autopsy may provide a conclusive diagnosis of Alzheimer's disease in the absence of an autopsy a clinical diagnosis of AD is only considered "possible" or "probable" based on other symptoms. Up to 23% of people who receive a clinical diagnosis of AD may not actually have the disease; instead, they may have pathology that points to another illness with symptoms similar to AD. AD is often diagnosed clinically based on the patient's medical history, family history, and behavioural observations. The diagnosis is supported by the presence of distinctive neurological and cognitive characteristics and the absence of other diagnoses. To assist rule out other cerebral pathology or dementia subtypes, advanced medical imaging techniques including as computed tomography (CT), magnetic resonance imaging

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(MRI), single-photon emission computed tomography (SPECT), and positron emission tomography (PET) can be used. Additionally, it might indicate the transition from moderate cognitive impairment (prodromal stages) to Alzheimer's disease. The FDA-approved radiopharmaceutical diagnostic agents florbetapir (2012), flutemetamol (2013), florbetaben (2014), and flortaucipir (2020) are used in PET for Alzheimer's disease. As of 2018, its application in clinical practise is primarily restricted to clinical trials due to the fact that many insurance companies in the United States do not cover this operation. Memory tests and assessments of intellectual functioning can be used to further define the condition. To facilitate and standardise the diagnostic process for practising physicians, medical organisations have developed diagnostic criteria. Only post-mortem examinations that use brain tissue that can be histologically evaluated for senile plaques and neurofibrillary tangles can provide a definitive diagnosis.