CURRENT SCIENCE IN ALZHEIMER'S DISEASE

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1. Question: what is one of the primary features of AD?

A. Only on postmortem examination can AD be determined

B. Plaques & tangles are still the main feature of AD causing loss of connections in neurons

C. The AD brain begins to shrink decades before a diagnosis is made

D. Damage in the hippocampus in the brain of AD patients causes loss of balance

2. Question: what is one of the main pathophysiological changes that occur in the brain of AD patients?

A. A CT scan can determine if a person has plaques indicative of AD

B. The brain of AD patients will often swell due to plaques and formation of tangles

C. Beta-amyloid plagues can be present in the AD brain decades before diagnosis

D. PET scans of patients with AD will have more hypermetabolic (bright areas) than a normal brain.

3. Question: what is a validated screening tool that can be used to evaluate for both MCI and AD?

A. MMSE

B. MoCA

C. Geriatric depression scale

D. Medicare wellness visit

4. Question: which FDA approved medication can be prescribed to treat all stages of AD?

A. Rivastigmine

B. Donepezil

C. Memantine

D. Galantamine

**5. Question: current research on OTC therapies for AD indicates which of the following:**

A. Vit E is effective in preventing dementia

B. Vit C was found to have a protective effect on the brain

C. OTC supplements should not be recommended to improve MCI or AD

D. Ginkgo biloba had a mild improvement in cognition

Dr. Kriebel-Gasparro, DrNP, MSN, FNP-BC, GNP-BC, Faculty Walden University, is dually credentialed as a family and gerontological nurse practitioner and has her Doctor of Nursing Practice from Drexel University. Her clinical practice for the past 13 years is performing Medicare assessments in Pennsylvania and New Jersey. In 2020 she received the AANP Pennsylvania State Award for Excellence; and in 2019 the Distinguished Nursing Educator Award from the National Hartford Center of Gerontological Nursing Excellence. In 2020 she received the GAPNA Excellence in Education Award. She has authored for the Journal for Nurse Practitioners, and reviews for HRSA, and multiple peer reviewed journals. She has published on Alzheimer's Disease, Parkinson Disease, and Bipolar Disorder with emphasis on the elderly patient.

SUMMARY

This poster describes the pathophysiological changes in the AD brain, the public health impact of AD, screening tools, current state of research on medications, OTC therapies, devices, and alternative therapies, the importance of caregiver support citing the most current research. The controversy of the recently approved AD drug is discussed.
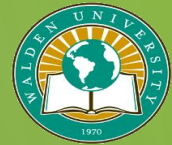
Current Science in Alzheimers Disease

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Background and Significance

Alzheimer's disease (AD) is a debilitating disease with early, moderate & late stages. Plaques & tangles are still the main feature causing loss of connections in neurons; beta-amyloid plagues can be present in the brain decades before diagnosis; damage initially takes place in the hippocampus, essential in forming memories. Neurons die, & by end stage brain tissue has shrunk significantly (see photo) By 2050 estimates AD will cost > $1.1 trillion for medical, drug, hospital care, home care visits, etc. Research for the past decades has focused on therapies that target the beta-amyloid and tau plaques and tangles that cripple the neurotransmitters in the brain. Unfortunately, clinical trials have not found effective new therapies.

Objectives

A review of scientific literature was performed to explore the most current science on Alzheimer's disease.

Methods

A critical review of scientific literature on AD published five years or less was performed to provide a synopsis of the most current scientific research and clinical trials

Implications for Practice

American Association of Neurology (AAN) recommends screening for mild cognitive impairment (MCI) at each Medicare Wellness Visit annually; diagnosis of MCI should be based on a clinical evaluation to differentiate MCI & dementia
No evidence-based studies indicate pharmacologic therapies for MCI are effective
Validated screening tests for detecting MCI are Montreal Cognitive Assessment (MoCA)
Mini-Mental State Examination (MMSE); MoCA can be used to evaluate for both MCI & AD
Research indicates that OTC supplements should not be recommended to improve MCI or AD
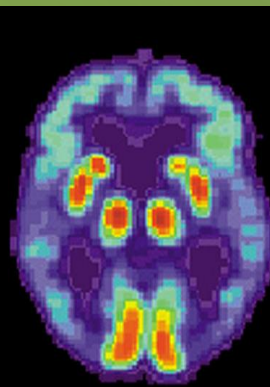
PET Scan: AD brain   **Normal brain**
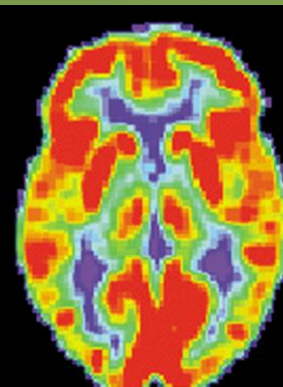
Findings

AChEI are centrally acting medications FDA approved to treat cognitive symptoms by delaying breakdown of acetylcholine in brain = delay dementia / not cure AD
Donezapil is an FDA approved medication can be prescribed to treat all stages of AD
Most clinical trials for new medications to treat AD dementia have been disappointing
Promising new research is in the field of biomarkers that can diagnose AD years before disease sets in such as CSF amyloid, volumetric magnetic resonance imaging, amyloid PET scan, & CSF tau and plasma neurofilament light tests will potentially enable clinicians to diagnose & treat AD years before ADD occurs

Implications for Research

Promising new research has primarily been in areas of non-pharmacological therapies for patients & caregivers such as lifestyle changes, exercise, good nutrition, social activity, new biomarkers, new imaging modalities, & novel devices to reduce symptoms of AD
Vaccine for AD (AADvac1) is in clinical trials and has promising results
The recent FDA approval of the Biogen drug Aduhelm (aducanumab) with support from the Alzheimers Association is facing controversy from neurologists due to its high cost and safety profile, and the FDA may review it in another clinical trial before releasing it for public use

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