Early Detection and Diagnosis of Alzheimer’s Disease

Why does it matter?

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Disclosures

- Employed by Eli Lilly
Biography

• Training in Internal Medicine and Fellowship in Geriatric Medicine – University of Rochester

• 25 years in clinical practice with experience in geriatric assessment, primary care, hospital care, hospice, home care, nursing home care, teaching and research.

• Member of the Med-sci board of the Indianapolis chapter of the Alzheimer’s Association
Objectives

• Review pathophysiologic and clinical changes seen in AD
• Describe current diagnostic paradigm
• Outline barriers to early detection and diagnosis of AD
• Reevaluate value of early, accurate diagnosis
Growing Population of AD

Alzheimer’s Association, 2016 Alzheimer’s Disease Facts and Figures, Alzheimer’s & Dementia, Volume 9, Issue 2
Alzheimer’s Disease: Natural History

- Early Disease
  - Symptoms
  - Diagnosis
  - Loss of functional independence
  - Behavioral problems
- Mild-Moderate Disease
- Severe Disease
  - Nursing home placement
  - Death

Pathophysiology

- Amyloid Plaques
- Neurofibrillary Tau Tangles
- Brain atrophy

http://sage.buckinstitute.org/amyloid-beta-and-alzheimers-disease/
Accessed 1-29-17
Theoretical framework
Early clinical findings are late in disease process

Nature 461, 916-922 (15 October 2009)
Current Diagnostic Paradigm

Figure 1: Timeline of disease progression

- Onset of neuropathology
- Reliably predictive biomarkers
- Onset of cognitive decline
- Onset of disability
- Subjective impairment/helpseeking

T1: Earliest possible diagnosis in the event that we develop reliably predictive biomarkers
T2: Earliest possible diagnosis using currently available technology
T3: 'Timely' diagnosis, responding to patient and carer concerns rather than proactively screening for the disease
T4: Current 'late-stage' diagnosis

Barriers to Diagnosis

- Stigma, denial
- Dismissed as “normal aging” by seniors
- Poor understanding of early symptoms
- Shortage of dementia “specialists”
- Limited treatments
Why early?

- Accurate diagnosis
- Interventions more effective
- Opportunity for planning/decision making
- Societal Imperative
Accurate Diagnosis

• “Approximately 25% of people diagnosed clinically with mild AD dementia have been shown to be amyloid negative”

Early intervention
Exercise: The best treatment

• In mild cognitive impairment due to Alzheimer’s disease, aerobic exercise reduced levels of tau, which makes up tangles

• In mild Alzheimer’s, aerobic exercise improved neuropsychiatric symptoms, such as agitation
Early intervention: Mediterranean Diet

• Mediterranean diet and brain structure in a multiethnic elderly cohort
  – Conclusions: Among older adults, Mediterranean Diet adherence was associated with less brain atrophy, with an effect similar to 5 years of aging. Higher fish and lower meat intake might be the 2 key food elements that contribute to the benefits of Mediterranean Diet on brain structure.

• Neurology® 2015;85:1744–1751
Opportunity to plan:
Self Awareness

• Clinical associations of anosognosia in mild cognitive impairment and Alzheimer's disease
  
  – Mild Anosognosia – 43% in MCI, 56% in AD
  – Severe Anosognosia – 10% in MCI, 28% in AD


https://clickthreetimes.wordpress.com/tag/blogging/
Accessed 1-29-16
Societal Imperative

• Early diagnosis can reduce ineffective, expensive, crisis driven use of healthcare resources.

Hill, JW. Neurology 2002;58:62-70
In Summary – Early Matters

• There are many barriers to early and accurate diagnosis
• Current diagnostic paradigm is late
• Knowing early can alter individuals/caregivers approach the way the disease affects their lives
• Evolving knowledge of pathophysiology gives hope that the disease may be preventable
Thank you!