AD Pathology

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Stages of Dementia

Age

Cognition

Preclinical Stage

Mild Cognitive Impairment

Mild Dementia

Worsening memory
Functional limitations
Needing more support

Moderate Dementia

Profound loss of abilities
Behavioral problems
Increasing burden

Severe Dementia

End-stage cognition
Dependent
Poor quality of life

Isolated memory
Independent
Excellent quality of life

Mild

50

55

60

65

70

75

80

85
AD Pathology

- There are 3 consistent neuropathological hallmarks:
  - Amyloid-rich senile plaques
  - Neurofibrillary tangles
  - Neuronal degeneration
- These changes eventually lead to clinical symptoms, but they begin years before the onset of symptoms
CSF Biomarkers of Alzheimer’s Disease

- Beta-amyloid (1-42)
- Total Tau protein
- Phospho-Tau

*Blennow and Hampel, Lancet Neurol (2003)*
CSF Predicts MCI Conversion to AD

- CSF analysis in MCI patients followed >4 years
  - Stable MCI (56)
  - Convert to AD (57)
  - Other dementias (21)
- Identify optimum cut-offs
  - Beta-amyloid, Tau, P-Tau
  - 95% Sensitivity
  - 87% Specificity
- Cox proportional hazard models
  - Unadjusted odds ratio 32.8 (10.2 – 105.6)
  - Adjusted odds ratio 19.8 (5.99 – 65.7)
- MCI to AD conversion rate:
  - Abnormal CSF: 27%
  - Normal CSF: 1%

Hansson et al., Lancet Neurol (2006)
Visualizing AD Pathology in Living People

• Unanswered questions
  • What does it mean if a person has Alzheimer’s pathology in their brain but she is completely normal?

• Research approach
  • Study cognitively normal people in middle age
  • Apply new technologies to identify predictive markers of Alzheimer’s
Family Caregiver Self-Assessment

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Caregiving is Hard

So: What’s the “right” assessment question?

• Am I a saint? A perfect spouse or daughter?
• Am I doing a good job?
• Am I causing irreparable damage?
• How long can I last?
• Is this killing me; Is it time to call it?
• What choices have I got?
A Starting Point: What’s the Objective?

Getting through the day safely, calmly, pleasantly – mostly.

• Hit the mark -- successful? From 1 to 10?
• Damage done to the person? From 1 to 10?
• Damage to me? From 1 to 10?
• Fits with why I’m doing this From 1 to 10?
• Care needs within skill set? From 1 to 10?
• Able and willing to call for help? From 1 to 10?
• Help realistically available? From 1 to 10?
Other Real Issues

• What other options?

• Financial Realities

• Cultural Norms and Values
No Clear and Single Answer: Each Situation is Unique

A balance of capacities, values, resources, and a sense of “the good”

• Is the current situation within tolerable limits? Safety must be ensured.

• Is there a point in the future when the balance might shift past tolerable limits – for the person or the caregiver?

• Should that moment arrive: what are the options?
• Plan and Arrange now
Dual-Tasking in Physical Activity Programming in MCI
What is Dual-Tasking

- Performing multiple tasks at one time
- Higher attention, balance, and executive function
- Motor-Motor dual tasks
- Motor-Cognitive dual tasks
Dual-Tasking & MCI

- Normal aging is associated with subtle cognitive decline
- Sharper decline in individuals with Mild Cognitive Impairment
- Timed Up & Go with Cognitive Task
  - Preference for one task
  - Not able to complete other task without halting first task
Benefits of Dual-Task Exercises

• Aerobic & Resistance training positive effect on cognition (Landrigan et. al, 2019)
• Simultaneous Motor-Cognitive training may be more beneficial (Tait, et. al 2017)
• Various advantages
  • Time / Benefit
  • Greater mental stimulation
  • Slow cognitive decline
  • Incorporating games into exercise
Incorporating Dual-Tasking

- Motor-Motor
- Motor-Cognitive
Examples of Dual Tasking Exercises

• Cognitive Task + Motor Movement
  • Counting Backwards by Threes + Bicep Curls (start at 30)
  • Reverse Order Months of the Year + Lunges
• Name a word for each letter of the alphabet + Chair Stand
• Can be done with a partner
Take Away!

• Dual Tasking Exercises can help slow cognitive decline
• Don’t overcomplicate! Incorporate one “task” at a time
• Higher cognitive benefit
• No equipment needed
References


Covid-19: Wearing Gloves

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For the general public, CDC recommends wearing gloves when you are cleaning or caring for someone who is sick.

- When running errands, wearing gloves is not necessary
- practice **social distance** (at least 6 feet) from others
- washing your hands with soap and water for 20 seconds (or using a hand sanitizer with at least 60% alcohol)
- wear a **cloth face covering** when you have to go out in public.
Other ways to protect yourself

- COVID-19 is a respiratory virus and is mainly spread through droplets created when a person who is infected coughs, sneezes, or talks.

  • the best way to prevent illness is to avoid being exposed to this virus.
  • The virus is thought to spread mainly from person-to-person.
  • Between people who are in close contact with one another (within about 6 feet).
  • Through respiratory droplets produced when an infected person coughs, sneezes or talks.
  • These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs.
  • Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms.
When cleaning
When you are routinely cleaning and disinfecting your home:

- Follow precautions listed on the disinfectant product label, which may include:
  - wearing gloves (reusable or disposable) and
  - having good ventilation by turning on a fan or opening a window to get fresh air into the room you’re cleaning.
- **Wash your hands** after you have removed the gloves.
When caring for someone who is sick

• If you are providing care to someone who is **sick at home or in another non-healthcare setting**
• Use disposable gloves when cleaning and disinfecting the area around the person who is sick or other surfaces that may be frequently touched in the home.
• Use disposable gloves when touching or having contact with blood, stool, or body fluids, such as saliva, mucus, vomit, and urine.
• After using disposable gloves, throw them out in a lined trash can. Do not disinfect or reuse the gloves.
• **Wash your hands** after you have removed the gloves.
When gloves aren’t needed

• Wearing gloves outside of these instances (for example, when using a shopping cart or using an ATM) will not necessarily protect you from getting COVID-19 and may still lead to the spread of germs.
• The best way to protect yourself from germs when running errands and after going out is to regularly wash your hands with soap and water for 20 seconds or use hand sanitizer with at least 60% alcohol.
Guidelines and recommendations for glove use in healthcare and work settings will differ from recommendations for the general public.