The ABCs of Alzheimer’s Disease Diagnosis: A Primer for Families

Disclosures

- Drs. Holden, Medina, and Bettcher have no disclosures

Presenters

- What to expect when you see a neurologist
  – Samantha Holden, MD
- Faculty Fellow, Neurology
- Neuropsychology and its role in AD diagnosis
  – Luis D. Medina, PhD
- Faculty Fellow, Neuropsychology
- AD Diagnosis: Neuroimaging
  – Brianne M. Bettcher, PhD
- Assistant Professor, Neuropsychology
What To Expect
When You See a Neurologist

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Before Your Visit

• Organize your thoughts
  – Why are you seeing the neurologist? What are you worried about in particular?
  – What symptoms are you having?
• Think of specific examples
  – How long have the symptoms been present?
  – How are the symptoms affecting your daily life?

Before Your Visit

• Ask a loved one for their input
  – Better yet, ask them to accompany you to your visit
  – Having a different perspective is extremely helpful
  – They can also help listen and take notes when seeing the doctor
Before Your Visit

• Think about your past medical history
  – Medical conditions
  – Medications
  – Surgeries
  – Hospitalizations

Before Your Visit

• Think about your family history
  – Anyone in the family with any memory problems?
  – Anyone who died very early?

Before Your Visit

• Write down your questions
  – What are you worried about?
  – What can you do about your symptoms?
When You Arrive for Your Visit

• Be prepared for a long visit – up to 2 hours
• Filling out paperwork
• If at the University, you may be seen by residents or fellows first

History

• Current symptoms:
  • What are they?
  • How long have they been present?
  • Specific examples?
  • Did you notice yourself or did others need to tell you?
• How has your health been otherwise?
• Any big life events recently?

History

• How are you getting by day to day?
  – Activities of Daily Living
    • Paying the bills
    • Managing medications
    • Driving
    • Cooking
History

• How is your mood?
• How are you sleeping?
• How are you eating?

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History

• Other medical conditions?
  – Medications
  – Surgeries
  – Allergies

• Family history of any diseases?
  – Especially neurologic diseases
  – Especially memory trouble

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Mental Status Exam

• Brief tests of thinking and memory
  – About 20-30 minutes of your visit

• Not just memory tests
  – Evaluate different parts of mental function, at different levels of complexity

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Neurologic Exam

- Cranial Nerves
- Strength
- Sensation
- Coordination
- Reflexes
- Gait and balance

Next Steps

- Discussion about possible diagnoses
- Answering your questions
- Ordering testing:
  - MRI brain
  - Blood work
  - Neuropsychological evaluation
- Treatments

Neuropsychology and its Role in AD Diagnosis

Luis D. Medina, PhD
Faculty Fellow, Neuropsychology
University of Colorado Anschutz Medical Campus
What is “Neuropsychology”

Neuropsychology defined

- Measurement and analysis of the consequences from brain damage:
  - Cognitive
  - Emotional
  - Behavioral

Goals of Neuropsychology

- Medical
  - Inferences on the state of a disease and diagnostic decisions (localization/lateralization)
- Ecological
  - Everyday abilities (work, school)
- Rehabilitation
  - Strengths & weaknesses
  - Can we teach compensatory strategies?
  - Candidacy for treatment
Functional Domains

- Intelligence
- Language
- Visuospatial Abilities
- Attention
- Learning & Memory (verbal, non-verbal)
- Processing speed
- Emotional/adaptive functioning

Dementia

- Alzheimer’s disease
- Vascular dementia
- Fronto-temporal lobar degeneration
- Lewy body dementia

Other related disorders:
- Huntington’s disease
- Parkinson’s disease
- Wernicke-Korsakoff syndrome
- HIV-associated neurocognitive disorder (HAND)

Alzheimer’s Disease

- Dementia involving memory loss, other declines in cognitive and adaptive functioning
- Most prevalent neurodegenerative disorder, affecting about 5 million Americans
- Sixth leading cause of death in U.S.
- Risk increases with age, but can attack people in 30s-50s
Alzheimer's Disease Diagnosis: Neuroimaging

Brianne Bettcher, PhD
Assistant Professor, Neuropsychology
University of Colorado Anschutz Medical Campus

Typical Aging: Possible Narratives

- Non-degenerative, Cognitive Decline
- Neurodegenerative Pathology, Cognitive Decline
- No decline, Cognitively healthy!
- Neurodegenerative Pathology, Subtle/No Cognitive Decline

Neuroimaging in a Clinical Assessment

- Helps "rule out" other factors
- May provide additional evidence for diagnosis
- Establishes a "baseline" for comparison

Why is having a "picture" of my brain useful?
Structural Scans: CT and MRI

CT SCAN
"Computed Tomography"

MRI SCAN
"Magnetic Resonance Imaging"

Structural Scans: Patterns

Typical presentations of Alzheimer’s disease have characteristic changes in certain parts of the brain.

Brain Hypometabolism (FDG-PET)

FDG-PET scans can tell us about how much glucose (energy!) the brain is using in specific areas.

Courtesy of Gil Rabinovici
**Combining Neuroimaging with Clinical Assessment**

- Brain scans are **not** used in isolation!
- They are incorporated with the rest of the evaluation to:
  - Provide an accurate diagnosis
  - Help with treatment planning
  - Refer to studies, when applicable

**Neuroimaging in Research: Structural MRI**

- MRI Voxel Based Morphometry: Analyzing fine grained areas of gray matter in the brain
- Diffusion Tensor Imaging: Analyzing white matter connections in the brain
Neuroimaging in Research

- Amyloid PET Imaging can be used to look at progression of pathology:
  - In different groups (Healthy, Mild Impairment, Dementia)
  - Across time (Annual Research Visits)

Rocky Mountain Alzheimer’s Disease Center (RMADC)

RMADC Website
http://medschool.ucdenver.edu/alzheimers

Welcome to the Rocky Mountain Alzheimer’s Disease Center
RMADC Clinical Research

• Standard of Care Study (PI: Dr. Woodcock)
• Pilot Clinical Trials of Leukine® (PIs: Drs. Potter and Woodcock)
• Biomarker and Clinical Phenotyping Study (Bio-AD, PI: Dr. Bettcher)
  – Actively recruiting adults aging adults for annual research visits
  – Research consensus conference for all participants
  – Any relevant medical information may be passed on to participant and/or referring physician

Thank You to Our Team!

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