Our Grey Matter Matters: A Case in Point

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Objectives

• Evaluate when and how to do an office based assessment in menopausal women with memory concerns
• Understand the optional office screening tests
• Assess when to refer for evaluation of subjective cognitive decline

My Patient: The story

• Mrs B. is a longstanding patient in my practice. Now age 77, at the time of presentation, age 73
• Worked as a bookkeeper for many years
• Rushed, scheduled, often in on her lunch hour.
• Businesslike
• Over the last few visits, 1-2 years, late for appointments, slightly disheveled with things falling out of her purse, slightly anxious and upset.
• Made a few mistakes at work, bills unpaid and couldn’t remember some basic facts
Framing the Discussion of Aging to Women

Women live longer than men however:
- in general spend less time in the formal labour market
- are more likely to work in atypical forms of employment (i.e. part-time, temporary work)
- more likely to engage in unpaid work (due to caring responsibilities)
- earn on average less over their life
- face occupational segregation
- in general retire earlier

Build up lower entitlements to pension benefits

Many women face a real threat of poverty and social exclusion in their post-retirement phase of life

Widowed/divorced older women do not remarry (58%), versus 84% of widowed/divorced men who remarry

Normal memory changes with Age versus AD

<table>
<thead>
<tr>
<th>Alzheimer’s Disease</th>
<th>Age-Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor judgment and decision making</td>
<td>Making a bad decision once in a while</td>
</tr>
<tr>
<td>Inability to manage a budget</td>
<td>Missing a monthly payment</td>
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<tr>
<td>Losing track of the date or the season</td>
<td>Forgetting which day it is and remembering later</td>
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<tr>
<td>Difficulty having a conversation</td>
<td>Sometimes forgetting which word to use</td>
</tr>
<tr>
<td>Misplacing things and being unable to retrace steps to find them</td>
<td>Losing things from time to time</td>
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</tbody>
</table>

Alzheimer’s Association

Next steps: Hx and Physical Exam

- BP, cardiac evaluation
- Lipids and routine BW
- TSH
- B12
- Urine culture
- Consider neuroimaging
- Review medications, risk side effects
Neuroimaging Guidelines

- Neuroimaging if
  - Age <60
  - Rapid decline (1 or 2 months) in cognition or function
  - "short" duration of dementia <1 yr.
  - Recent significant head trauma
  - Unexplained neuro sx (severe headache, seizure)
  - History of cancer (esp those that metastasize to brain)
  - Use of anticoagulants or bleeding disorder
  - History of urinary incontinence or gait disturbance early in course of dementia (NPH)
  - Any new localizing signs
  - Unusual or atypical cognitive sx (progressive aphasia)
  - Any new localizing signs (hemiparesis)
  - Gait disturbance

- NEW CT or MRI suggested in assessment of cognitive impairment if the presence of unsuspected cerebrovascular disease would change the clinical management
- NEW MRI recommended when radiologist/neuroradiologist or a cognitive specialist can interpret patterns of atrophy/other features that may provide added diagnostic or predictive value (grade 2B)

- Canadian Consensus Conference on the Diagnosis and Treatment of Dementia, 2012

Medications:

- Antianxiety drugs: dampen the activity in key areas of the brain
- Statins: may lower cholesterol in the brain which is needed for connections
- Anti-seizure medication: dampens the flow of signals in the CNS
- Antidepressants: blocks the action of brain transmitters
- Parkinson's Drugs: alters activation of dopamine
- Narcotic Painkillers: stem the flow of pain perception, but also chemicals involved in cognition
- Beta blockers: interferes or blocks key chemicals
- Sedatives: acts on brain pathways, affecting chemical transmission
- Incontinence drugs: Blocks acetylcholine, which though helpful if incontinent, can inhibit memory and learning
- Antihistamines: also inhibit acetylcholine

TREATABLE CONDITIONS
THAT IF LEFT UNTREATED,
CAN MIMIC ALZHEIMER'S
DISEASE:

- medication interactions
- low vitamin B12
- an underactive thyroid
- a tumor
- a urinary tract infection
- untreated depression

1. Memory loss that disrupts daily life
2. Challenges in planning or solving problems

3. Difficulty completing a task

4. Confusion with time or place

5. Trouble understanding visual images and spatial relationships
6. New problems with words in speaking or writing

7. Misplacing things and losing the ability to retrace steps

8. Decreased or poor judgment

9. Withdrawal from work or social activities
10. Changes in mood and personality

Quick Screen

1. 3 word recall (OR 3.1)

2. Animal names in 1 minute (OR 20.2)

3. Clock Draw (OR 24)

• OR= Odds Ratio

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Quick Screen

3-Item Registration: Instruction: Tell the person you are going to do a short memory test. "I will give you three words to remember... after I finish please repeat the words back to me." Then repeat them again a second time, asking the person to repeat back the 3 words to you. Then finish with, "In a few minutes I will ask you to remember the 3 words."

• 1 2 1 2 1 2 Ball Chair Home

2. Animal Naming: Instruction: Please name as many 4-legged ANIMALS from anywhere in the world you can think of in one minute... as many 4-legged animals anywhere in the world in 1 minute starting now.

• 1st 15 seconds ________________________________
• 2nd 15 seconds ________________________________
• 3rd 15 seconds ________________________________
• 4th 15 seconds ________________________________

• Number of ANIMALS ______ (only count 4-legged animals, no repeats)

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Quick Screen

• Clock Drawing Test: Instruction:

A. Ask patient to put the numbers that you would see on the face of a watch or clock.

B. Draw the hands of the clock to show the time as ten after eleven or ten past eleven.
MMSE vs MOCA

- MMSE (Mini Mental State Exam)
  - 26 or greater is normal
  - 20-25 mild cognitive impairment
  - 10-19 moderate cognitive impairment
  - 0-9 severe cognitive impairment
  - Specificity 100% (no false positives)
  - Used since 1975 (Folstein), well validated
  - Copies available from many sources on the internet including BCGuidelines.ca

- MoCA (Montreal Cognitive Assessment)
  - 26 or greater is normal
  - <26 detects
    - 90% of MCI
    - 100% of mild AD
    - Specificity 87% (13% false positives)
    - More sensitive for MCI, mild AD
  - Created 1996, well validated
  - Available in several languages
  - Free access at mocatest.org
MMSE vs MoCA

- MoCA tests 5 domains; delayed recall involves 5 words, registration and recall separated by several other activities; greater sensitivity for milder impairment of cognitive function than MMSE
- MoCA identifies visual-spatial difficulties (unlike MMSE) with 3 tests; abbreviated Trails B, cube draw and clock draw. MMSE pentagon test is single visual-spatial assessment. Visual-spatial assessment important for any patient driving.
- REMEMBER...both MoCA and MMSE are SCREENING tests. A score of less than 26 suggests cognitive impairment. Diagnosis is made by history and interpretation of clinical and cognitive tests.

Factors: Cognitive decline/Risk of Alzheimer’s Disease

**Risk Factors**
- Age
- Women
- Genetic mutations
  - Apolipoprotein E ε4 allele *
- Diabetes*
- Cerebrovascular disease*
- Depressive symptoms
- Psychological distress
- Parkinsonian signs
- *

**Protective Factors**
- Apolipoprotein E ε2 allele
- Years of education
- Cognitive activities
- Physical activities *
- Social activities
Other Risk Factors

- Head injury: rates of concussion may be higher in women leading to increased head injuries and AD
- Low serum levels of folate and vitamin B12 - due to social isolation and living alone, increased in women
- Elevated plasma and total homocysteine levels - elevated in women with Alzheimer's disease
- Fewer years of formal education - stronger effect in women
- Lower income - lower occupational status - stronger effect in women
- Hormonal status - decline in estrogen - increased risk of AD for women

When to Refer?

- No other explanation for the various changes seen
- No blood tests or imaging that is helpful
- Patient is not depressed though maybe experiencing increasing anxiety
- Relatives corroborate the concerns
- Objective changes in hygiene, demeanor and interaction
- Reassuring if all negative, but also reassuring that the doctor is listening, that someone outside the family is aware and paying attention.
- Need to evaluate driving ability! Caregiving role? Babysitting grandchildren?

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References

Gauthier et al, Recommendations of the 4th Canadian Consensus Conference on the Diagnosis and Treatment of Dementia (CCCDTD4)