Clinical Assessment and Diagnosis of Mild Cognitive Impairment

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Disclaimer

No conflict of interest identified.

Presentation Outline

- Defining MCI: DSM-5, ICD-10, Mayo Clinic Criteria
- In Comparison to Dementia
- Pseudodementia
- Prevalence & Conversion Rates
- Demographic Considerations
- Screening for MCI
- Diagnostic Instruments
- Biomarkers
- Referrals and Consultation
Think About This...

What challenges have you confronted regarding MCI in your practice?

In what role do you see yourself regarding MCI diagnosis?

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Defining MCI

**DSM-5 Criteria**

1. Evidence of modest cognitive decline in one or more cognitive domains
   a) Subjective cognitive complaint
   b) Impaired cognition performance
2. No loss of capacity to complete IADLs, though some compensatory behaviors
3. Not Delirium
4. Not due to another mental disorder
5. Specifiers
   (American Psychiatric Association [APA], 2013)

**Specifiers:**
- Due to:
  - Parkinson's disease
  - Huntington's disease
  - Another medical condition
  - Multiple etiologies
  - Unspecified

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Defining MCI (continued)

**ICD-10 Criteria**

Mild Cognitive Disorder:
1. Decline in cognitive performance:
   a) E.g., Memory, learning/concentration
2. Objective test data indicate abnormality
3. Other diagnoses cannot be made
4. Differential diagnosis: Not post encephalitic syndrome or post concussional syndrome due to lack of FRI, milder symptoms, short duration

(World Health Organization [WHO], 2016)
Defining MCI (continued)

Mayo-Clinic Criteria

- An intermittent stage of cognitive functioning between normal and severely abnormal decline
- Cognitive complaint (memory complaint not necessary)
- Impaired cognitive functioning
- Decline in functioning from previous state
- Essentially normal functioning
- Four subtypes: amnestic single domain, amnestic multiple domain, non-amnestic single domain, non-amnestic multiple domain

(Petersen, 2004)

In Comparison to Dementia

<table>
<thead>
<tr>
<th>Mild Cognitive Impairment</th>
<th>Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate decline in cognitive functioning</td>
<td>Significant decline in cognitive functioning</td>
</tr>
<tr>
<td>No loss of independence</td>
<td>Deficits interfere with independence</td>
</tr>
<tr>
<td>Memory impairment probable, though not necessary</td>
<td>Significant memory impairment</td>
</tr>
<tr>
<td>Neuropsychiatric symptoms present, though mild (e.g., irritability, anxiety, depression)</td>
<td>Neuropsychiatric symptoms generally more severe and may include psychotic symptoms, disinhibition, irritability, depression, aberrant motor behavior</td>
</tr>
</tbody>
</table>

(Monastero, Mangialasche, Camarda, Ercolani, & Camarda, 2009)

Pseudodementia

- Neuropsychiatric symptoms (NPS) are associated with cognitive decline and progression from MCI to dementia
- Depression can reduce cognitive functioning and mimic dementia symptoms (e.g., memory impairment, slower processing speed)
- Pseudodementia is a psychiatric condition confused with dementia, though depression is most commonly misdiagnosed

Depression or Dementia?

Depression results in less specific cognitive deficits and yields variable performance (APA, 2013)

Treating depression can reduce/resolve cognitive symptoms

Significant impact Consider the consequences of a misdiagnosis of dementia, a progressive condition with a poor outlook, when in reality the symptoms result from treatable depression
Prevalence and Conversion Rates

- MCI estimated at 10–20% of general population aged ≥65 (Langa & Levine, 2014)
- In general healthcare settings, up to 25% cases of dementia undetected, as high as 50% of MCI undetected (Kliemt, Hauer, and Portakal, 2011)
- Conversion rate from MCI → Dementia approximately 32.3%; 30.2% for AD (Mitchell and Shiri-Feshki, 2009)
- Annual conversion rate from MCI → Dementia approximately 9.6%; 6.8% for AD (Mitchell and Shiri-Feshki, 2009)

Average survival rate from onset of dementia until death is approximately 4.6 years (WHO, 2015)

Demographic Considerations

Risk Factors for MCI:
- Older age
- Higher prevalence in females, though higher incidence of MCI in males, explained by females’ longevity (Zamora et al., 2013; Roberts & Knopman, 2013)
- Fewer years of education
- Presence of apolipoprotein e4 allele or family history of AD or another dementia
- Strain on the vascular system (e.g., Type II Diabetes, hypertension) (Roberts & Knopman, 2013)

Interestingly:
- Approximately 20% of cases of MCI will revert to normal functioning (however, it should be noted that the presence of MCI is a risk factor for later-life dementia, even if MCI symptoms revert to normal for a period of time) (Roberts & Knopman, 2013)

Screening for MCI

- Required cognitive screening during the Annual Wellness Visit (AWV) for Medicare recipients (Cordell et al., 2013)
- Implemented as of 2011, focus on using a free, easily administered, <5 minute screening tool, strong psychometrics
  ➔ As a result of enforced copyright laws, Mini-Mental State Exam (MMSE) and Montreal Cognitive Assessment (MoCA) were not recommended (Cordell et al., 2013)
  ➔ Proposed screeners for AWV:
    - Memory Impairment Screen (MIS)
    - General Practitioners Assessment of Cognition (GPCOG)
    - Mini-Cog (Cordell et al., 2013)
Screening (continued)

- Amnestic MCI (a-MCI) constitutes the majority of cases and indicates worse pathology than the non-amnestic subtype (e.g., greater impairment in ADLs) (Bombinet al., 2012)
- Behavioral changes, specifically apathy, are associated with a-MCI and can be measured by screens including the Neuropsychiatric Inventory (NPI) (Palmer et al., 2010; Ellison et al., 2008)
- Loss of insight or impaired judgment (Mussle et al., 2013)

→ Judgment: whether to respond and how to respond to everyday situations

Screening (continued)

An important note: a positive screen will lead to further, more extensive assessments.

**Mini-mental State Examination, 2nd Edition (MMSE-2)**

- “Gold standard”
- Score: 0-30 points
- Cut-off score of 24:
  - >24: Not likely
  - 24-23: Probable MCI
  - <24: Probable AD
- Not sensitive as a stand-alone measurement of progression to AD (Arevalo-Rodriguez, et al., 2015)

- Not designed to be used as a diagnostic instrument (Folstein, Folstein, White, & Messer, 2010)

- Measures cognitive functioning: Orientation to Time, Orientation to Place, Registration, Attention and Calculation, Naming, Repetition, Comprehension, Reading, Writing, Drawing

**Montreal Cognitive Assessment (MoCA)**

- Score range: 0-30; Administration time: 10 minutes
- Cut-off score of 26 signifies impairment
- Specifically designed to screen for MCI with more demanding tasks (i.e., longer recall periods, more word items for memory, fewer learning trials (Nasreddine, et al., 2005))
- Content areas: Visuospatial/Executive Functions, Naming, Memory, Attention, Language Abstraction, Delayed Recall, Orientation

- If mild cognitive impairment is suspected, but no functional impairment likely, administer the MoCA first as it has strong sensitivity to MCI (Nasreddine, et al., 2005; O’Caoimh, Timmons, & Molloy, 2016)
Screening (continued)

**Clinical Dementia Rating**

- **Global Score Range for Dementia Symptoms**
  - 0 = None
  - 0.5 = Questionable
  - 1 = Mild
  - 2 = Moderate
  - 3 = Severe

- Clinical interview of 6 domains: Memory, Orientation, Judgment and Problem Solving, Community Affairs, Home & Hobbies, and Personal Care
- Global scoring is driven by the Memory domain
- Subjective clinical rating of symptoms based on information gathered from caregiver and patient, can give a more qualitative clinical picture

Diagnostic Instruments

**Repeatable Battery for the Assessment of Neuropsychological Status Updated (RBANS)**

- Scores in 12 subtests and 6 domains:
  - Immediate Memory
  - Visuospatial/Constructional
  - Language
  - Attention
  - Delayed Memory
  - Total Scale
- Administration time 20-30 minutes
- Standardized norms

Diagnostic Instruments (continued)

**Dementia Rating Scale, Second Edition (DRS-2)**

- Scores in 6 domains:
  - Attention
  - Initiation/Perseveration
  - Construction
  - Conceptualization
  - Memory
  - Total Score
- Age and Education-corrected norms
- Administration time: 15-30 minutes
- An interactive assessment (similar to a cognitive assessment)
Biomarkers

### Advantages:
- MRI can be used to measure cortical atrophy (e.g., white matter hyperintensities)
- Genetic testing for presence of apolipoprotein ε4 allele
- Neuroimaging techniques can identify progression of disease

### Disadvantages:
1. Cost-preventative procedures
2. Invasive procedures (e.g., cerebral spinal fluid)

A Few Other Notes

1. Adding the Clock Drawing Test to the MMSE can improve identification of cognitive impairment (Cacho et al., 2010)
2. A vast number of other brief screens for cognitive impairment exist (e.g., Short Test of Mental Status, ADAS-Cog, CERAD, etc.)
3. Monitoring cognitive decline in adults without current decline can help establish a baseline, which will be beneficial for measuring decline

Referrals and Consultation

1. Talk to the family members, ask them to describe what they notice about the client
2. Consult the family physician or PCP to obtain history of decline in abilities
3. Refer to a neuropsychologist or a neurologist; rule out presence of other neurological disorders or to help identify an underlying pathophysiological condition (e.g., frontotemporal dementia)
Key Points

1.) MCI (mNCD) is a separate diagnostic entity, a condition between normative aging and dementia
2.) Appropriate screening and follow-up
3.) Considerations in Dx:
   - Subjective cognitive (not necessarily memory) complaint
   - Corroborated cognitive decline
   - No loss of independence or significant loss of I/ADLS
   - Standardized assessment data

References


References (continued)
References (continued)


Thank You

What challenges have you confronted regarding MCI in your practice?

In what role do you see yourself regarding MCI diagnosis?