

Dementia

Diagnostic Criteria and Terms

- Dementia - aka major neurocognitive disorder
 - significant decline in one or more cognitive domains that interferes with the person's independence and daily activities.
 - 6 cognitive domains:
 - complex attention, executive function, learning and memory, language, perceptual motor function, and social cognition.
- Mild cognitive impairment (MCI)
 - Impairment that is not severe enough to interfere with independently functioning.
 - Some patients with MCI may progress to dementia while others may not.
 - Systematic review - 32% of patients with MCI developed dementia over 5 years.
 - 10 to 40% of patients with MC may return to normal cognition over 4-5 years.
- Cannot occur exclusively during bouts of delirium
- Cannot be explained by another mental disorder

Types of Dementia

- Alzheimer's disease = 60-80%
- Vascular dementia in isolation = 10%
 - often presents as mixed with Alzheimer's disease.
- Lewy body dementia, Parkinsonian related dementia, Normal Pressure Hydrocephalus, Fronto-Temporal Dementia = 10%
 - Frontotemporal dementia:
 - less than 10% of total dementia cases
 - 60% of dementia cases in patients ages 45 to 60

Screening Tools

- Step 1: GPCOG or Mini-Cog or Ascertain
- Step 2: MMSE or MOCA or SLUMs
 - ideally, Clinician administered.
 - ideally, do 2 of them

Differentials

- Thyroid disease
- Depression
- Niacin/B3 Deficiency
- Normal Pressure Hydrocephalus
- B12 deficiency
- Wernicke-Korsakoff
- Frontotemporal lobar degeneration
- Parkinson's disease
- Prion disease
- HIV infection
- Huntington disease
- Traumatic brain injury
- Substance or medication use
- Delirium
- Metabolic abnormality (electrolytes, thyroid)
- Heavy metal poisoning
- Syphilis
- Meningitis/Encephalitis
- Autoimmune
- Neoplastm/metastasis
- Seizure
- Sarcoid
- Stroke/TIA
- Wilson's disease
- Hypoglycemia
- Dehydration

History and Exam

History

- Obtain from patient, family, caregivers.
- PMH, PSH, FMH, Allergies, Social Hx
- Meds, supplements, vitamins
- Ask about prior trauma/head injury
- ADLs/IADLs
- Screen for depression
- Caregiver Burden
- Functional status, social support
- Vision/hearing/balance issues
- DME at home
- Physical disability
- Driving issues
- Safety issues w/ staying home alone
- Speed of progression, onset, changes since onset
- educational status
- social activities/involvement
- prior labs/imaging
- examples for cause of concern from patient and caregiver/family

Cognitive Domains

- Complex attention
 - normal tasks take longer, hard to complete tasks when several stimuli present, hard to remember things while doing a task such as math calculations or phone number while dialing, has to review things more than before
- Executive function
 - hard to do previously familiar multi step tasks like making a meal, hard to complete tasks because they get distracted easily, not interested in socializing or going out as much because it's more effort and therefore less enjoyable
- Language
 - hard to find the right words, using generic terms rather than people's names, mispronouncing words, having issues understanding both verbal and written communication
- Learning and memory
 - being forgetful, repeating conversations, hard to recall recent events, forgetting to pay bills, buying the same items from the store several times, having to use lists or tasks to complete items.
- Perceptual-motor
 - difficulty using tools, appliances, technology that are commonplace, getting lost in familiar places
- Social cognition
 - apathy, inappropriate behaviors, lack of empathy, poor judgment

Exam

- Vitals
- General appearance
 - conditioning, breathing effort, gait, conversation
- Eyes:
 - vision, cataracts, reactive pupils, EOM
- Ears
 - canal, TM, obstruction, hearing
- CV exam
 - heart, carotids, pulses
- Thyroid
- Pulmonary exam
- Skin
 - wounds, ulcers, infection
- Swallowing issues
- Neuro-psych exam
 - CN, gait, alertness level, speech, balance, muscle tone, tremors, mentation, mood, affect, grooming, dress, MSK ROM and strength, dystonia, insight, judgement, behavior, memory

Evaluation and Management

Initial Workup and Evaluation

1. Clinical Suspicion
2. History from patient, caregiver, family member
3. Brief Screening Tool
 - a. Mini-Cog, GPCOG, Ascertain Dementia
4. If positive: MMSE, MOCA, SLUMA (do any 2 tools)
5. Neurocognitive testing referral (if any doubts)
6. Depression screening, caregiver burden scale, IADL/ADL scale
7. Assess special senses, support system, social/clinical needs, fall risk, frailty assessement, nutritional status
8. Eliminate medication causes, reduce polypharmacy
9. Labs: cbc/cmp/tsh/b12/Niacin/RPR/HIV/hgA1c
 - a. if concern, check UDS, heavy metal screen
 - b. if concern, vascular markers/inflammatory markers
 - c. Optional: Precivity AD2 (cost \$1250) or Lumipulse (<\$1000)
10. Imaging: MRI brain w/o contrast

Non Pharmacological Management

- Address pain, polypharmacy
- Reduce meds
- Remove vitamins, minerals, herbs, supplements
- Address balance and strength issues
 - cane/walker/physical therapy/exercise
- Address nutrition
 - diet recs, dietician referral, family engagement
- Address depression
 - socialization, counseling
- Caregiver burden
 - counseling, exercise, socialization
- Assess special senses
 - glasses, cataract surgery, hearing aids
- Address swallowing issues
 - dentures, oral hygiene, dental referral
- Support system, socialization
 - hobbies, activities, senior center

Pharmacological Management

- Donepezil (Aricept)
 - cholinesterase inhibitor, ?mild benefit for mild/moderate dementia, can be combined with memantine
 - adverse effects include AV block, anorexia, diarrhea, headache, nausea, Torsades, vomiting, syncope
- Rivastigmine (Exelon)
 - cholinesterase inhibitor (affects ACHE [cortex] and BuCHE [glial cells], ? mild benefit in mild/moderate dementia
 - adverse effects include AV block, anorexia, diarrhea, headache, nausea, Torsades, vomiting, syncope
- Memantine (Namenda)
 - NMDA receptor antagonist, ? help for mild/moderate/severe dementia
 - can combine w/ donepezil
 - adverse events: confusion, constipation, diarrhea, dizziness, vomiting, rare AKI, care CVA
- Galantamine
 - increases cholinergic activity but reduces degradation of acetylcholine
 - may help w/ cognition, REM sleep, reduction of apoptosis
 - adverse events: AV block, anorexia, nausea, vomiting, diarrhea, rash, bladder outflow obstruction, headache, dizziness
- Anti-amyloid monoclonal antibodies
 - Recommend neurology consult - high cost \$26-32k
 - May decrease brain amyloid beta plaques, can cause amyloid related imaging abnormalities in 40% of patients, microhemorrhages and hemosiderosis in 30% of patients.
 - May cause AMS, diarrhea, falls, headaches, urticaria.
- Depression management:
 - SSRI, SNRI, Mirtazapine
- Agitation management:
 - redirection, SSRI, SNRI, Atypical antipsychotic such as risperidone, quetiapine

Resources

- **NIH:**
 - <https://www.nia.nih.gov/health/health-care-professionals-information/alzheimers-and-related-dementias-resources#tools>
 - Cognitive assessments, Tools for dx and tx, patient care, clinical trials and studies, patient and caregiver education
- **AAFP Cognitive Care Kit**
 - <https://www.aafp.org/family-physician/patient-care/care-resources/cognitive-care.html>
 - Resources for prevention, index visits, cognitive evaluation, diagnosis and disclosure, management of mild to severe cases, management of late stages, driving and safety, long term planning and placement, caregiver resources.

When to Refer

1. Diagnostic uncertainty
2. Neuropsychological testing
3. Rapid Progression
4. Need for newer meds/experimental treatments
5. Need psychiatric assistance
6. Specialized imaging
7. Multiple Conditions exist
8. Neurocognitive disorders
9. Traumatic brain injury

Diagnosis	Symptoms and Features	Pearls
Frontotemporal Dementia	• due to severe focal atrophy of frontal and temporal regions, subcortical gliosis, neuronal loss • May show gray matter atrophy on imaging • Language impairment, deficits of executive function, socially inappropriate behaviors, loss of empathy, change in dressing/eating habits, changes in religious/political beliefs, compulsive behaviors, progressive aphasia • Subtypes/variants include behavioral variant and primary progressive aphasia	• 30% have family history • Avoid anticholinesterases • SSRIs may help w/ disinhibition, impulsivity, repetitive behaviors, eating disorders • may need antipsychotics for severe neurobehavioral issues ◦ use less D2 receptor antagonists
Alzheimer’s Dementia	• amyloid plaques and neurofibrillary tangles in parietal/temporal/parieto-occipital cortex on pathology • confusion, recent recall issues, taking longer to accomplish normal/daily tasks, mood/personality changes, difficulty w/ language/organizing thoughts, psychosis in later stages, depressive features.	• early impairment of memory and attention. • Rare to get motor and autonomic changes as with Parkinson’s • Can get delusions. Can have hallucinations later on. • Marked personality changes occur later.
Vascular Dementia	• May have CAD, DMII, HLD, HTN as comorbidities • May had prior TIA/CVA • Neuroimaging findings can include: ◦ White matter changes, chronic microvascular ischemic changes, bilateral multiple infarcts, multiple lacunar strokes, periventricular white matter lesions extending into deep white matter. • subtypes ◦ cortical vs subcortical. ◦ mild vascular cognitive impairment, multiinfarct dementia, vascular dementia from single infarct, due to lacunar lesions, due to hemorrhagic lesions, Binswanger disease, subcortical vascular dementia, mixed. • Can be due to arteriopathies, ◦ inflammatory arteriopathies - polyarteritis nodosa, temporal arteritis) ◦ noninflammatory ateropathies - moyamoya, fibromuscular dysplasia • Can be due to hypoperfusion from large vessel or cardiac etiology affecting watershed areas.	• cognitive impairment acute/subacute after neurological event and stepwise progression (especially w/ multi infarct dementia and not always w/ lacunar infarcts) • Major depression usually present. • changes in executive functioning prior to severe memory changes. • intellectual deficits are early - disorientation, memory deficits, intattention, vague responses • absence of imaging findings is evidence against the diagnosis. • Control risk factors: BP control, BS control, statin, aspirin
Parkinson’s Dementia	• caused by filamentous aggregates of misfolded apha syncuclein protein which form intracytoplasmic inclusions called Lewy Bodies in the brain, mostly in midbrain substantia nigra nd locus cerleus. • can affect cognition, behavior, movement, autonomic function	• motor symptoms precede dementia (bradykinesia, rigidity, tremor. • cognitive symptoms come later • hallucinations do NOT occur early • Balance issues are later • Common dementia meds don’t usually help the dementia • For psychosis, use low D2 2nd generation antipsychotics
Dementia with Lewy Bodies	• presence of Lewy bodies and amyloid plaques in subcortical and cortical (frontotemporal) regions of brain • deficiency of both acetylcholine and dopamine neurotransmitters • combination of Alzheimer’s and Parkinson’s features • Core features required for diagnosis: ◦ progressive cognitive decline to interfere with normal functioning ◦ prominent or persistent memory impairment usually with progression (not usual in early cases) ◦ deficits on attention/front-subcortical skills, visuospatial ability • Core essential features (2 for probable and 1 for minimum) ◦ fluctuating cognition, change in attention/alertness ◦ visual hallucinations ◦ motor features of Parkinson’s • Supportive features: falls, syncope, LOC, delusions, sleep issues, depression	• unlike Alzheimer’s, early motor changes, personality changes. • can have delirium, hallucinations, delusions early. • Motor changes of Parkinson’s start early, usually within 1 yr • Cholinesterase inhibotors can be effective. • Avoid anticholnergic medications as they can exacerbate dementia symptoms • Do not respond to Parkinson’s meds • Antipsychotics can precipitate severe reactions and worsen morbidity/mortality

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