Dementia Evaluation and Treatment

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modified by

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Dementia Evaluation

- Assessment
- Cognitive Screening Tests
- Etiologies of Dementia
- Treatment / Referral

Why do we care about dementia?

- "Graying" population
  - by 2030, there may be 70 million elderly in the United States (Currently around 35 million)
- Current prevalence rates of dementia
  - 6-8% if older than 65
  - 30% if older than 80

Terminology

Main Entry: **de·men·tia**
Etymology: Latin, from *dement-, mens* mind

1 : a condition of deteriorated mentality often with emotional apathy
2 : MADNESS, INSANITY <a fanaticism bordering on *dementia*>

- Dementia
  - an acquired syndrome consisting of a decline in memory and other cognitive functions

Diagnosis of Dementia

- Memory Impairment AND one of the following:

  -Aphasia, Apraxia, Agnosia, or impaired Executive Fuctioning
- Deficits cause significant impairment in social or occupational functioning

Aphasia

- Characterized initially by a fluent aphasia
  - Able to initiate and maintain a conversation
  - Impaired comprehension
  - Intact grammar and syntax however the speech is vague with paraphasias, circumlocutions, tangential and often using nonspecific phrases ("the thing")
- Later language can be severely impaired with mutism, echolalia.

Apraxia

- Inability to carry out motor activities despite intact motor function
  - Contributes to loss of ADLs

Agnosia

- The inability to recognize or identify objects despite intact sensory function
  - Typically occurs later in the course of illness
  - Can be visual or tactile

Impaired Executive Function

- Difficulty with planning, initiating, sequencing, monitoring or stopping complex behaviors.
  - Occurs early to midcourse
  - Contributes to loss of intrumental activities of ADLs such as shopping, meal preparation, driving and managing finances.

Dementia subtypes

- Early onset: before the age of 60
  - Less than 5% of all cases of AD
  - Strong genetic link
  - Tends to progress more rapidly
- Late onset: after age 60
  - Represents the majority of cases

Features Associated with Dementia

- Agitation
- Aggression
- Sleep disturbances
- Apathy (can be misdiagnosed as depression)
- Depression or anxiety
- Personality changes
- Behavioral disinhibition
- Impaired insight
- Hallucinations (visual more common than auditory)
- Delusions (often paranoid or persecutory)

Steps to take in Dementia Evaluation

- History
- Physical and Neurological Exam
- Cognitive Screening Test
- Rule out Reversible Causes
- Neuroimaging
- Consider the Etiology
- Treatment or Referral

History Taking

- Patient will "forget" their memory problems too
  - Get history from caregiver or spouse, if possible.
  - Memory impairment may be evidenced by repetitive questioning, list writing, lost objects, etc.

Instrumental Activities of Daily Living (IADL's)

- Telephone
- Travel
- Shopping
- Meals
- Housework
- Medicine
- Money

Activities of Daily Living

- Bathing
- Dressing
- Grooming
- Toileting
- Continence
- Transferring

History Taking

- Ask about memory impairment
- Ask about daily activities to asses functioning
- Dementia is not just memory impairment!
- Next step=cognitive screening test

Importance of Cognitive Screening

- Establish a baseline level of functioning
- Allows for objective documentation of cognition
- Cognitive Impairment is often not documented
  - Such patients are not evaluated for potentially reversible causes
  - They also do not receive treatment

Screening Tests

- Mini-Mental State Exam (MMSE)
- Clock Drawing Test (CDT)
- Mini-Cog
- Time and Change
- 7-Minute Screen
- Montreal Cognitive Assessment (MoCA)
- SLUMS

Screening Tests
Mini-Mental Status Exam

- Orientation (10 points)
- Registration (3 points)
- Attention and Calculation (5 points)
- Recall (3 points)
- Language (8 points)
- Visuospatial (1 point)
- Total=30, if less than 25, consider dementia.

Normative Data on MMSE

	Age (years)												
Education	18-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	>84
4th Grade	22	25	25	23	23	23	23	22	23	22	22	21	20	19
8th Grade	27	27	26	26	27	26	27	26	26	26	25	25	25	23
High School	29	29	29	28	28	28	28	28	28	28	27	27	25	26
College	29	29	29	29	29	29	29	29	29	29	28	28	27	27

Normative scores vary with age and education level!

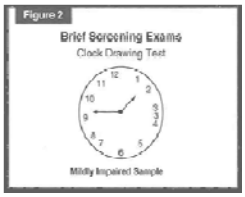
MMSE
Pros and Cons

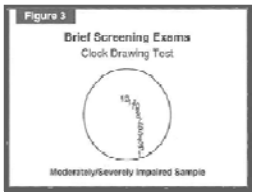
- Pros
  - Widely used and therefore can track cognition over time and between clinicians
  - 5-10 minutes.
- Cons
  - False positives: those with little education.
  - False negatives: those with high premorbid intellectual functioning.
  - Psychologically stressful--makes people angry!

Clock Drawing Test (CDT)

- "Draw a large circle on the (blank) page."
- "Put numbers on the circle."
- "Place hands to show 10 past 11."
  - Tests planning, visuospatial abilities, but *not memory*
  - Less stressful, less culture-bound

Clock Drawing Test--abnormal





Mini-Cog

- Clock-Drawing + three-item memory test
  - More sensitive than CDT
  - Same advantages as CDT
  - Not as commonly used as MMSE, but FAST
  - Involves visuospatial, executive and planning, and memory functions
- "Positive"= 2 word recall and/or abnormal clock

History= Memory + ADL's

Cognitive Screening Tests= MMSE, Clock Drawing

Next--rule out "reversible" causes

Potentially Reversible Dementias

- Drug Toxicity
- Metabolic Disturbance
- Normal Pressure Hydrocephalus
- Mass Lesion (Tumor, Chronic Subdural)
- Infectious Process (Meningitis, Syphilis)
- Collagen-Vascular Disease (SLE, Sarcoid)
- Endocrine Disorder (Thyroid, Parathyroid)
- Nutritional Disease (B12, thiamine, folate)
- Other (COPD, CHF, Liver Dz, Apnea…)

Potentially "Reversible" Causes

- Fewer than 13% are reversible
- Very few do in fact reverse
  - Treatment does not mean they return to "normal"
  - "Treatable" a more appropriate term, but usually not "curable"

Labwork

- Electrolytes
- CBC
- Liver Enzymes
- TSH
- B12 Level
- Syphilis?
- Others only if clinical suspicion high

Neuroimaging

- Most Treatment Guidelines call for brain scan
  - CT usually adequate
  - MRI if Vascular Dementia suspected
  - "Small areas of white matter ischemic changes"--a common, seen in normals
  - Functional Imaging--not in initial workup

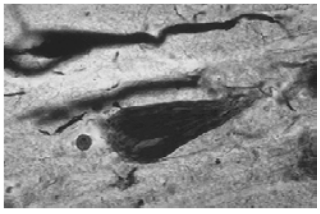
Establish Diagnosis

- Consider the cause because
  - Treatments exist
  - Responses to treatments vary
  - Prognoses vary
  - Allows clinician to provide family with more meaningful information regarding the future

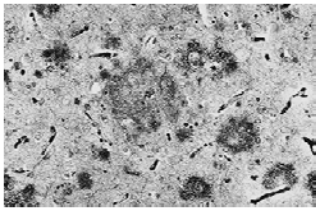
Dementia Syndromes Alzheimer's Disease

- Insidious onset and gradual progression.
- Presentation usually related to primary deficits in recent memory.
- Incidence age-related: 8% per year by 85.
- 1/2-2/3 of the time, the cause of dementia is AD.
- Ultimate diagnosis based on pathology of plaques and tangles

Neurofibrillary Tangles: bundles of filaments inside the neuron.



Senile Plaques: neuritic processes around an amyloid core.



Acetylcholine in AD

- Biochemically characterized by a deficiency of acetylcholine.
- Cerebral cortex, amygdala, hippocampus all affected.
- Basal nucleus of Meynert (basal forebrain) depleted of acetylcholine-containing neurons that project elsewhere

Genetics of AD

- In minority of cases there is an autosomal dominant inheritance linked to chromosome 1, 14, or 21. This is associated with early onset (<60 years of age).
- The presence of an allele E4 increases risk, especially if homozygous.
- AD is probably a common manifestation of multiple underlying disorders.

Course of AD

- Insidious onset and progressive course with typical loss of 3 points on MMSE each year and death occurring 8-12 years after diagnosis.

Course of AD--Mild

- MMSE 20-24
- Usually the first 2-3 years after diagnosis
- Primarily memory and visual-spatial deficits
- Mild difficulty with executive functioning

Course of AD--Moderate

- MMSE 11-20
- 3-6 years following diagnosis
- Aphasia and apraxia become more pronounced
- Loss of IADLS and increased assistance with ADLs
- Beginning to exhibit some neuropsych symptoms particularly paranoia

AD course--Severe

- Usually 6-10 years following diagnosis
- Severe language disturbances: mutism, echolalia, repetitive vocalizations
- Pronounced neuropsych manifestations including agitation, aggression
- Very late in the course can see muscle rigidity, gait disturbances, incontinence, dysphagia

Dementia Syndromes Vascular Dementia

- Second most common form of dementia after AD
- Most common type of dementia including subtypes is AD + vascular
- One or more strokes, two or more cognitive functions affected.
- Aka "Binswanger's Disease," "lacunar state," or "multi-infarct dementia."

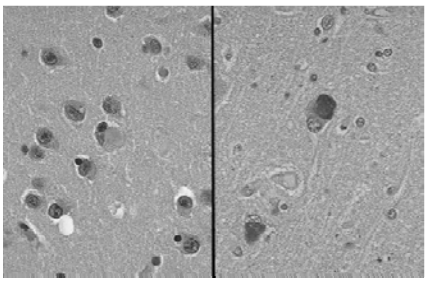
Dementia Syndromes Vascular Dementia

- Should be reserved for patients with clear evidence of stroke on imaging or physical examination.
  - 10-40% of all dementia cases
  - 10-15% of AD cases are "mixed"
  - Treatment focused on risk factors
    - smoking
    - atrial fibrillation
    - diabetes
    - hypertension

Dementia Syndromes Dementia with Lewy Bodies

- High Incidence: 7-26%
- Memory Impairment may come AFTER
- Visual Hallucinations, delirium, parkinsonism
- Sensitive to neuroleptics
- Decline faster than in AD

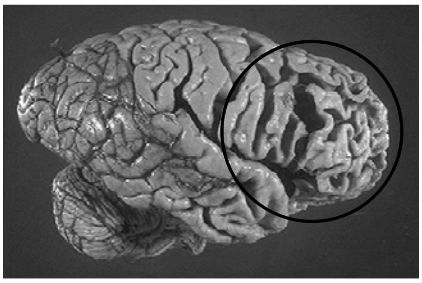
Cortical Lewy Bodies



Dementia Syndromes Frontotemporal

- Pick's Disease is type of frontotemporal dementia.
  - Personality changes, disinhibition, executive dysfunction
  - Memory impairment
  - FT atrophy on brain imaging. Generally asymmetric

Pick's Disease aka "Walnut Brain"



Dementia Syndromes Frontotemporal (Pick's)

- "Presenile" in onset: 40-60
- More progressive and rapidly deteriorating than AD
- Final diagnosis also autopsy-based

Treatment--Behavioral

- Should actually be tried first, before medications.
  - Generally consist of reassurance, distraction, redirection, structure
  - Dont argue: it makes things worse
  - Provide for safe place where dysfuctional behavior can occur without causing harm

Treament--Behavioral

- Refer to Adult Day Care
- Respite/Adult Family Homes
- Caregiver Support Groups
- Psychoeducation
- Depression in caregiver
- SNF before crisis

Treatments-Pharmacologic

- Behavioral problems can warrant most attention secondary to...
  - Agitation
  - Depression
  - Delusions
  - Aggression
- Improvements are modest

Treatments-Pharmacologic

- Antidepressants
- Neuroleptics
- Anticonvulsants
- Benzodiazepines
- Psychostimulants
- Prazosin
- Cognitive Enhancers

Neuroleptics

- No gold standard.
- Side Effect Profile
- Very modest or no improvements compared to placebo
- *BLACK BOX WARNING: 1.6x increased risk of death

Treatments--Pharmacologic Anticonvulsants

- Agents= Carbamazepine, Divalproex
- Indications=disinhibited (YELLING) behavior in the absence of psychosis or depression
- Therapeutic Drug Levels apply to treatment of seizures
- Starting doses low

Cognitive Enhancers Acetylcholine Esterase Inhibitor (AchEI)

- FDA approved for Alzheimer's
  - SE's: GI upset, nausea, diarrhea, sleep
  - Consider for Lewy Body
  - Expensive!
  - How will you know they've been helpful?
    - Another argument for cognitive screening test
    - Document baseline level of functioning

NMDA antagonist memantine

- Indicated for moderate-to-severe A.D.
- Studies were add-on with an AChEI
- Titrate by 5 mg per week up to 10 bid
- Glutamate
  - overstimulation
    - excitotoxicity
    - neuronal cell death
- Not indicated for but used nonetheless

Vitamin E

- In *ONE* randomized, controlled study, Vitamin E showed some effectiveness in delaying SNF-placement.
  - Study had 2000 IU/d
  - No longer advised

Prazosin

- Alpha blocker
- Has demonstrated benefit for agitation
- Very few side effects
- Minimal effect on BP at therapeutic doses
- Studied at 1-2mg bid; higher doses are probably safe
- Can be used prn

When to Refer to a Specialist

- Early onset (<60)
- Presentation is atypical
- If severe parkinsonism, focal findings, or abnormal scan
- Behaviors seemingly "untreatable"
- To better document severity, consider neuropsychologist

Conclusions

- Prevalence of dementia will increase.
- Brief screening tools exist.
- Empirically validated treatments exist.
- Consider the etiology.
- Nonpharmacological interventions are also "treatments."
- Refer if necessary or if presentation atypical.
- ASK THE CAREGIVERS HOW THEY ARE DOING