



FACULTY OF
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Dementia

Geriatric Giants Lecture Series

Objectives



- To define dementia, list its causes, and illustrate them with a case-based approach
- To discuss MCI as a prelude to dementia
- To review how depression can mimic dementia and figures in its differential diagnosis
- To describe the treatment of these conditions, including pharmacotherapeutics



DSM IV Criteria for Dementia

- Memory Impairment
- One of (the four A's)
 - Aphasia
 - Apraxia
 - Agnosia
 - Erosion of Executive Function
- Which impairs independent daily function



Prevalence and Differential

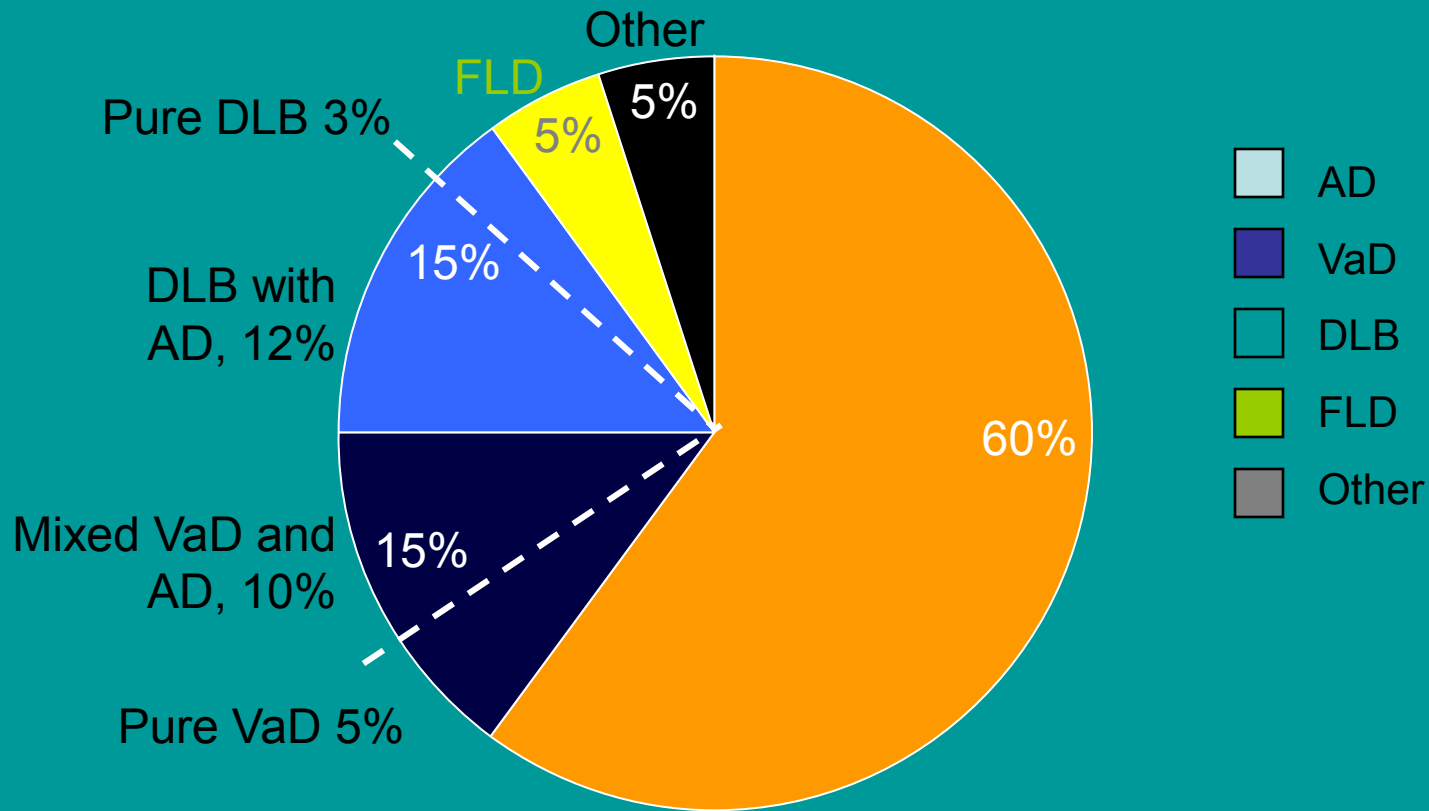
- Prevalence
 - 8% at age 65 years
 - 16% at age 75 years
 - 35% at age 85 years
- Differential must rule out
 - Delirium
 - Depression
 - Drugs

What causes dementia?



- There are many different causes of dementia. The most common are:
 - Alzheimer's disease (AD)
 - vascular dementia (VaD)
 - mixed dementia
 - Lewy body dementia
- Other causes include:
Parkinson's disease, severe alcohol abuse, fronto-temporal dementia, NPH, Creutzfeldt-Jacob disease, Huntington's disease, AIDS....

Prevalence of 4 major types of dementia



AD : 10 Warning Signs



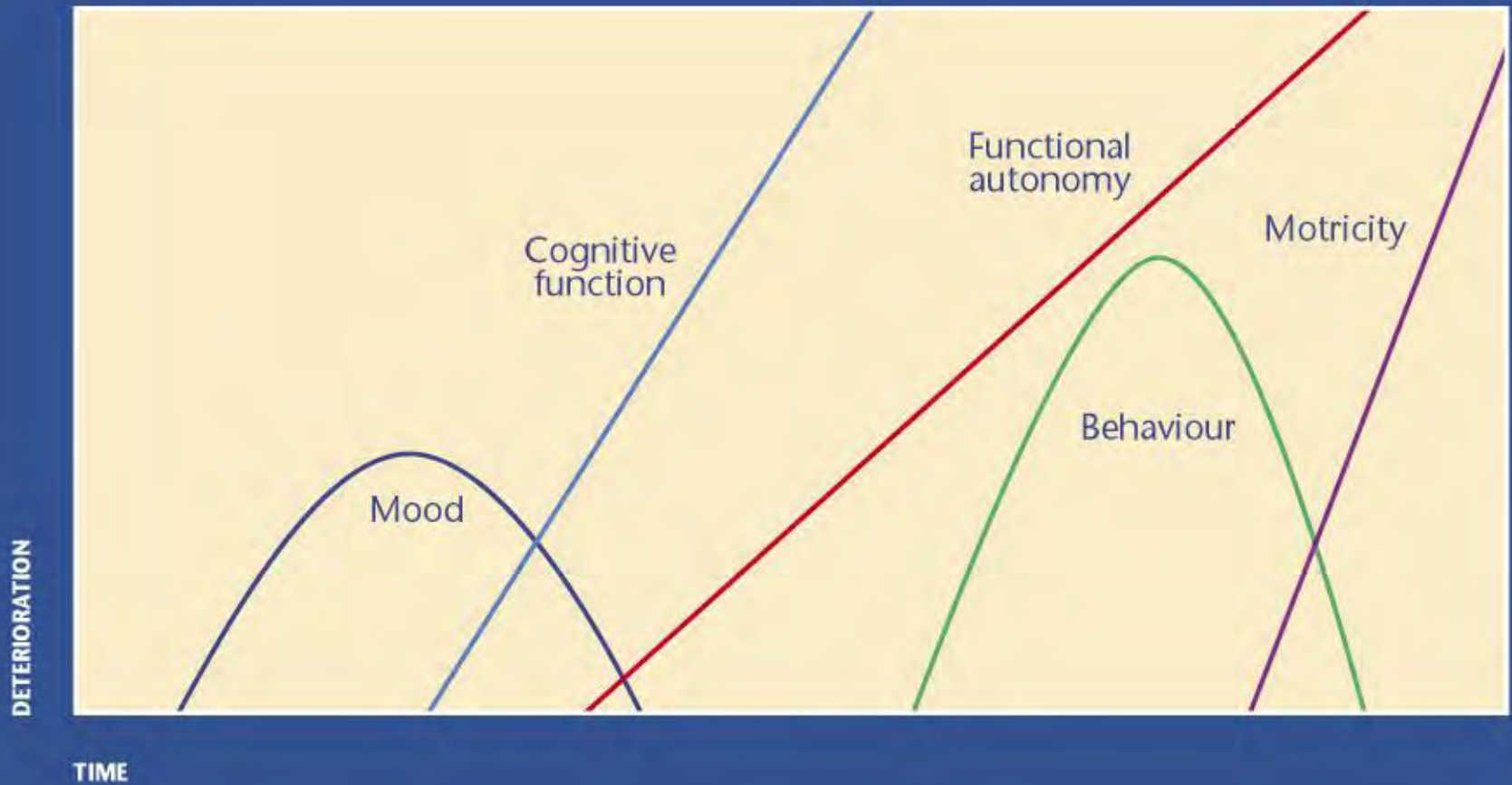
- Memory loss affecting day-to-day function
- misplacing objects
- disorientation to time & space
- difficulty performing familiar tasks
- language/speech problems
- poor or decreased judgment
- problems with abstract thought

AD : 10 Warning Signs



- Mood & behaviour changes
- Personality alterations
- Loss of initiative

Symptomatic domains of typical AD over time



7 Axioms of Exploring Cognition



- Step I: Seek out a reliable caregiver
- Step II: Map out the course of the confusional state
- Step III: Hose down ALL aspects of cognition
- Step IV: Perform an objective screening evaluation or scale, such as the Folstein Mini Mental Status Examination and other objective cognitive tests

7 Axioms of Exploring Cognition



Step V : Compare the cognitive loss to functional loss

Step VI : Examine the patient as thoroughly as possible
(esp CNS)

Step VII: Communicate the diagnosis to patient &
family with the key counseling

- When properly administered, the MMSE is a valid and reliable screening test for identifying cognitive impairment.
- MMSE takes 10 minutes to administer.
- Standardized MMSE (done by Dr. William Molloy) have timed tasks and lower inter rater variability (because of scoring rules).
- Factors that threaten test validity are age and education.

Reversible causes for dementias



- Hypothyroidism.
- B12/Folate deficiency.
- Hypercalcemia.
- Normal Pressure Hydrocephalus.
- Depression (Pseudo-dementia).
- Medications.

Differentiating Delirium from Dementia



Features	Delirium	Dementia
Onset	Acute	Insidious
Course	Fluctuating	Progressive
Duration	Days to weeks	Months to years
Consciousness	Altered	Clear
Attention	Impaired	Normal, except in severe dementia
Psychomotor changes	↑ or ↓	Often normal
Reversibility	Usually	Rarely

Mild Cognitive Impairment



- Prevalence in community 2X that of AD
- A transition stage between normal aging & AD
- 10-15% per year evolve into AD
- Usually only 1 cognitive domain affected, often memory
- Some insight into their state; function often preserved
- An area of ACTIVE research/investigation

(Amnestic) Mild Cognitive Impairment



- Subjective complaints of memory loss
- Corroborated by an informant
- Objective memory impairment when adjusted for age & education
- Generally preserved intellectual abilities
- NO, or only slight, functional impairment
- Failure to meet dementia criteria
- No other explanation for memory loss



- In two 3 year trials, compared to placebo NEITHER donepezil (Aricept[®]) nor galantamine (Reminyl[®]) were successful in delaying the conversion to AD

Vascular Cognitive Impairment New Classification (!)



- Vascular cognitive impairment, not demented
- Multi-infarct dementia
- Subcortical Ischemic Vascular Disease
- Strategic Infarcts
- Global Cortical Hypoperfusion
- Hemorrhagic Disorders
- CADASIL

Clinical Features of the classic multi-infarct dementia



- By history, abrupt onset, stepwise deterioration, prolonged plateaus
- Early onset of urinary incontinence
- Early onset of gait abnormalities
- Early onset of seizures
- History of hypertension, stroke / TIA's.
- On P.E.: patchy cognitive exam, CNS lateralization, prominent aphasia

- Includes Binswanger's & "état lacunaire"
- Insidious onset (>50%), NO stepwise progression
- Focal CNS findings often VERY subtle
- Atypical "frontal" gait , prominent deficits in attention & executive function
- Primary vascular lesion: SMALL vessel diseases

- An increasingly recognized category of VCI, Vad
- Previous studies (in traditional MID) revealed that cumulative volumetric capacity meant $> 100\text{cc}$ of brain. In strategic infarct dementia, may be $< 1/10$ of that.
- Left anterior & posterior cerebral artery territories
- Thalamic, hippocampal & dominant angular gyrus areas

- This 86 y.o. lady appears at your clinic in follow-up with her daughter. You had seen her 9 weeks ago for short-term memory loss (12-18 months' duration), withdrawal from her usual recreational activities and failure to thrive. Because she had admitted to slight sadness and very poor sleeping with 12 lb weight loss in the previous 6 months, you had diagnosed major depression & treated her with Sertraline (Zoloft). Nine weeks later, she appeared again with improved spirits, more energy, and a weight gain of 5 lb. You extended her prescription.

- On this visit, her daughter points out that her memory is still impaired, & worse than previously. In a recent game of bridge, she was not keeping up. The daughter was concerned about her driving ability on a trip to Westlock last week.



- Which details on history would you pursue?
- Is lab work of help?
- Is a CT scan indicated? An MRI scan?
- What are the diagnostic possibilities?

- This 81 y o lady presents to your office, anxious for an exam because she is convinced she has Alzheimer's. In recent months she has noticed significant impairment in memory, as well as some difficulties with concentration. Her memory appears to affect STM and LTM. She used to be an avid reader but discontinued this when she found she was retaining very little.
- She also describes symptoms of inner nervousness which have bothered her for 5 months. With prompting from her husband, she relates her belief that the police are watching her activities very carefully. She has noticed them parking outside her home and is worried they are going to convict her of a crime she did not commit.

- She describes herself as a lifelong poor sleeper but that this has worsened. She has not experienced speech and language difficulties, problems in navigation, or difficulties in executive functioning. In terms of behavior she is much more anxious than previously and her husband describes her as more irritable.
- There is no FH of depression or dementia. There is no h/o head injuries but she did suffer a CVA with no sequelae.

CASE II



- Which further details would you seek?
- What is the likely diagnosis?
- Would you prescribe a drug at this point?

Major Depression – Prevalence in Seniors



- In LTC facilities 13-15 %
- In the community 2%
- In acute care hospital 25%

Recognition of Depression



- S sleep poor, recent worsening
- I interest ↓, poor energy, ↓ enjoyment
- G guilt with lowered self esteem
- E energy down; withdrawal
- C concentration poor, as is MEMORY
- A appetite diminished; weight loss
- P psychomotor retardation or AGITATION
- S suicidal ideation; thoughts of death

Atypical Features of Depression



- Senior not always aware of sadness
- Cognitive impairment common (help!)
- New development of anxiety
- somatization/ bodily preoccupation
- 50% psychotic features (paranoid del.)
- “ the dwindles”
- High prevalence of suicide (men, alone)

CASE III



Mr. R. F., a 63 year old man, presents in your office accompanied by his wife. The main reasons for his visit pertain to a change in his behavior that has been ongoing now for two years. Over this time, he has exhibited irritability, belligerence, and frequent outbursts with loss of temper. To his wife, he appears less patient, more angry, and less flexible in his overall approach. She also mentions that he has shown a definite tendency to sleep more than previously, often retiring at 1900 hours in the evening, and sleeping for several hours at a time on weekend days. His personal hygiene is declining dramatically.

CASE III



You make several probing inquiries about his cognition. Both he and his wife do acknowledge some loss of recent memory, as well as speech and language difficulties. His insight into these described changes is nil. Work performance has fallen off, as has judgment. He had a near car crash last week & later joked about it. A Folstein Mini Mental Status Examination clocks a score of 28/30.

His complete physical examination is entirely within normal limits.

No psychotic features have been identified.

The likeliest diagnosis is :

- Agitated Major Depression
- Atypical Alzheimer's Disease
- Lewy Body Dementia
- Fronto-temporal Degenerative Dementia
- Personality Disorder
- None of the above



- How would you proceed from here?
- Are there medications that could help him?

- Relatively new entity fully articulated in '86
- Used to be termed “Pick’s Disease”
- Behavioral characteristics appear early on in the disease (compared to AD) & include:
 - disinhibition & poor insight
 - loss of social awareness
 - personal neglect
 - inertia and impulsivity

Dementias with fronto-temporal Features



- Fronto-temporal Degenerative Dementia
- Vascular cognitive impairment (small vessel subset)
- Alzheimer's Disease
- Alcohol-induced Dementia
- Post-traumatic Encephalopathy

- Lewy Bodies found throughout cortex & brainstem
- Classic Constellation
 - Progressive dementia (esp. inattentive)
 - Fluctuating cognition with hallucinations
 - motor features of parkinsonism, falls
 - neuroleptic sensitivity
- Response to rivastigmine (Exelon)

- Spongiform encephalopathy associated with rapid progression to dementia over days-weeks + array of neurological signs
- most get stimulus-sensitive myoclonic jerking especially with sudden touch or sound- startle myoclonus
- terminally, mute & akinetic
- 90% dead within 1 year

Normal Pressure Hydrocephalus



- Impaired CSF absorption with ventricular enlargement disproportionate for age.
- Triad (the temporal order counts)
- Remember the CLUSTER
 - Gait Apraxia
 - Urinary Incontinence
 - Dementia: subcortical - apathy/executive dysfunction

- Most common cause of dementia
- Slow, gradual decline with prominent short term memory and visuospatial problems
- Neurological exam usually normal in mild-moderate stages
- Pathologically, amyloid plaques and neurofibrillary tangles



- Mixed picture of Alzheimer's and vascular presentations

- In terms of treatment strategies in AD, two neurotransmitters have been studied
- Acetylcholine
 - Levels of acetylcholine are abnormally low
 - the basis for the use of acetylcholinesterase inhibitors
- Glutamate
 - Levels of the excitatory neurotransmitter, glutamate, are elevated

Cholinergic Treatment in AD



- Produces measurable improvement in cognition
- Effect is modest; equivalent to 6-12 month delay
- Positive behavioral effects
- Does not alter progression of neuro degeneration
- Cholinesterase inhibitors – Donepezil (Aricept), Galantamine (Reminyl) and Rivastigmine (Exelon)



These drugs are also trialed in:

- Mixed AD/Vascular dementia
- Lewy body dementia
- Parkinson's-related dementia

Benefits on behaviour in LTC pts with moderately advanced AD

- visual hallucinations
- apathy
- motor rummaging
- Anxiety & depression

AchEI's :Use Particular Caution



- In those with asthma, COPD, supra-ventricular conduction disorders, and peptic ulcer disease
- In frail elderly females of low body weight
- In those with a baseline sinus bradycardia (< 50)



- The first and only drug in a new class – NMDA receptor antagonists – for the treatment of AD
- Blocks pathological activation of NMDA receptors while preserving physiological activation required in learning and memory formation
- Indicated as monotherapy or as adjunctive therapy with cholinesterase inhibitors for the symptomatic treatment of patients with moderate to severe dementia of the Alzheimer's type

Psychosis & Agitation in the Elderly: Key Concepts



- These are COMMON, esp. in dementia
- Physical conditions, physical discomfort & medication side effects must be ruled out
- Appropriate pharmacotherapy can play an important role in the interdisciplinary plan

Non-pharmacologic Interventions



- Ensure co-morbid conditions treated
- Provide a SAFE environment
- Equip doors & gates with safety locks
- Home installations: grab bars
- Calendars, clocks, radios for orientation
- Remember night lights
- Avoid household clutter & glare surfaces

Non-pharmacologic Interventions



- Use a predictable daily routine
- Allow pt to dress in own clothing & keep possessions handy
- Before starting activity explain clearly
- Break complex tasks into steps
- Use distraction & re-direction to divert him from problematic situations

Non-pharmacologic Interventions



- Reduce over-exposure to environmental stimulation (I.e. crowded places)
- Consider a dementia day-care unit
- Enroll the patient in the Alzheimer Society Wandering Registry
- Remember the 3 R's: repeat, reassure, & re-direct

Caregiver Burden



- Spend from 40-100 hours per week with pt
- 90% affected emotionally (frustrated, drained)
- 75% report feeling depressed
- 60% have significant depression
- 50% have no time for themselves
- Loss of income is significant

Economic Burden of AD To Families



- 7 of 10 people with AD live at home
 - Family and friends provide 75% of care
- Average lifetime cost of care for an individual affected with AD:
 - \$174,000/year
- 3 of 10 people with AD have “paid care”
 - At the cost of \$19,000/year (mostly out of pocket)

(Fox, Kohatsu, et al., 2001)

Summary of Management of Dementia



- Diagnosis – cognitive history, neurobehavior, function, cognitive testing, PE, labs +/- CT
- Medication – consider AchEI
- Function – look at ways need support
- Mood, behavior, psychosis, safety (driving/stove/wandering) - any issues
- Medicolegal
- Disposition
- Caregiver burden

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- To describe the treatment of these conditions including pharmacotherapeutics