

IN THE NAME OF GOD



Dementia



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What is Dementia?

- **Dementia is a syndrome**
- **symptoms include loss of memory, judgment and reasoning, and changes in mood and behaviour.**
- **affect a person's functioning at work, in social relationships or in day-to-day activities.**

DEMENTIA

The word “Dementia” is used widely to describe a group of diseases which affects the brain and cause a progressive decline in a person’s abilities to remember, think and learn. The main abilities affected are:

- **Judgement**
- **Orientation**
- **Emotions**
- **Memory**
- **Thinking**

Dementia in IRAN

Results: The overall crude prevalence of dementia among people aged ≥ 60 years was 7.9% (8.7% in women and 6.9% in men) and age standardized dementia prevalence rate in Iran based on WHO standard population was 8.1% (9.6% in women and 6.5% in men). The prevalence of dementia was observed as 3.7% among people aged 60–64 years, 6.2% in the age-group 65–69 years, 10.4% in the age-group 70–74 years, 14.4% in the age-group 75–79 years, and 13.0% in the age-group ≥ 80 years. West Azerbaijan had the lowest and North Khorasan had the highest age-sex adjusted prevalence rate of dementia. Our results indicated that only 21.2% of subjects with dementia were diagnosed. We observed that diabetes mellitus, depressed mood, illiteracy, and increased age were associated with dementia.

Prevalence of Dementia and Associated Factors among Older Adults in Iran: National Elderly Health Survey (NEHS)

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“sub-cortical” dementias Vs Cortical:

- **Manifest most commonly with overall “slowness” of thinking and activity, apathy, social withdrawal, and big memory problems**

Higher Cortical Function

awareness



- *Insight*
- *Memory*
- *Orientation*
- *Thinking*
- *Perception*
- *Judgment*
- *Mood & affect*
- *Language*
- *calculation*



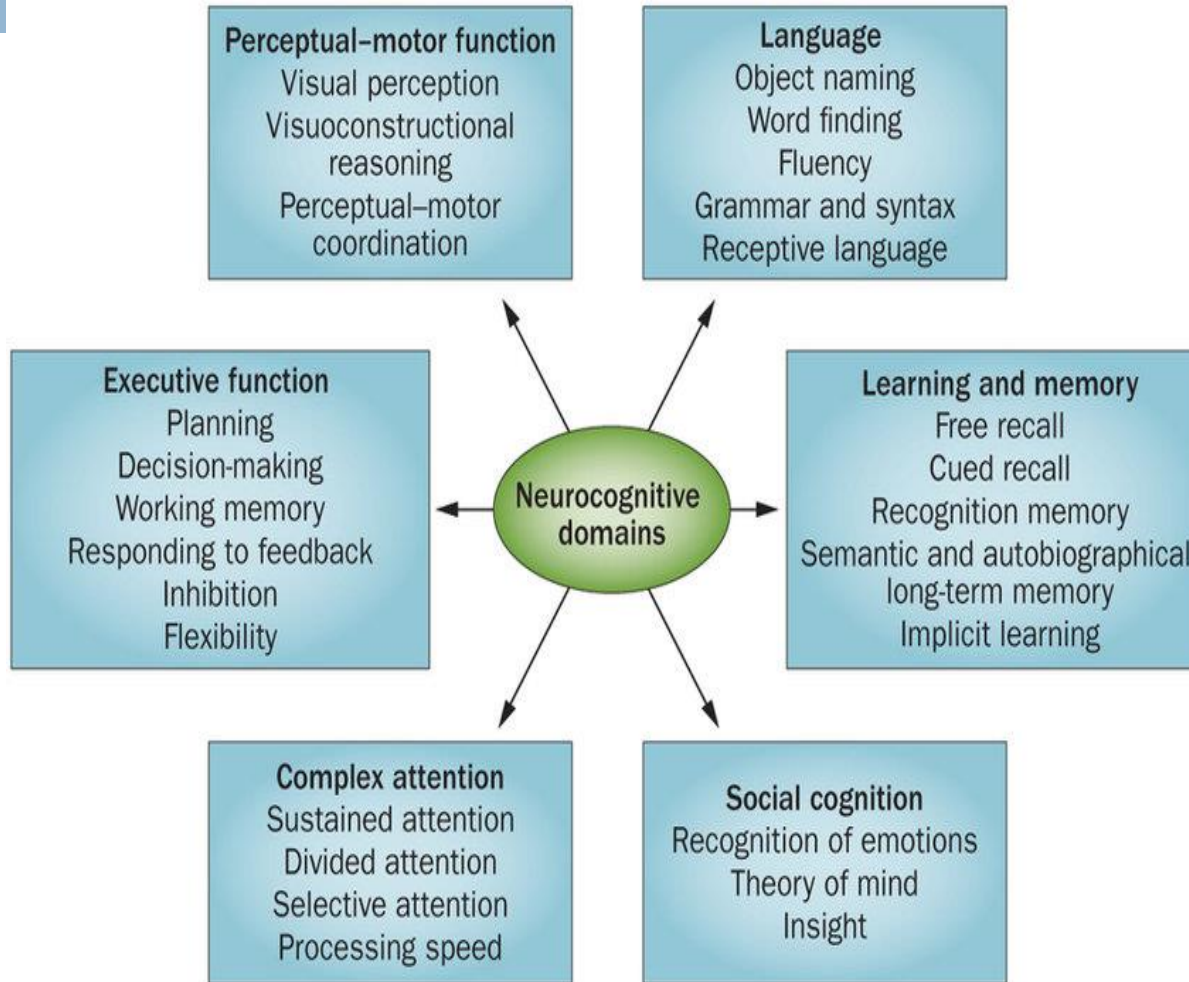
personality

Memory

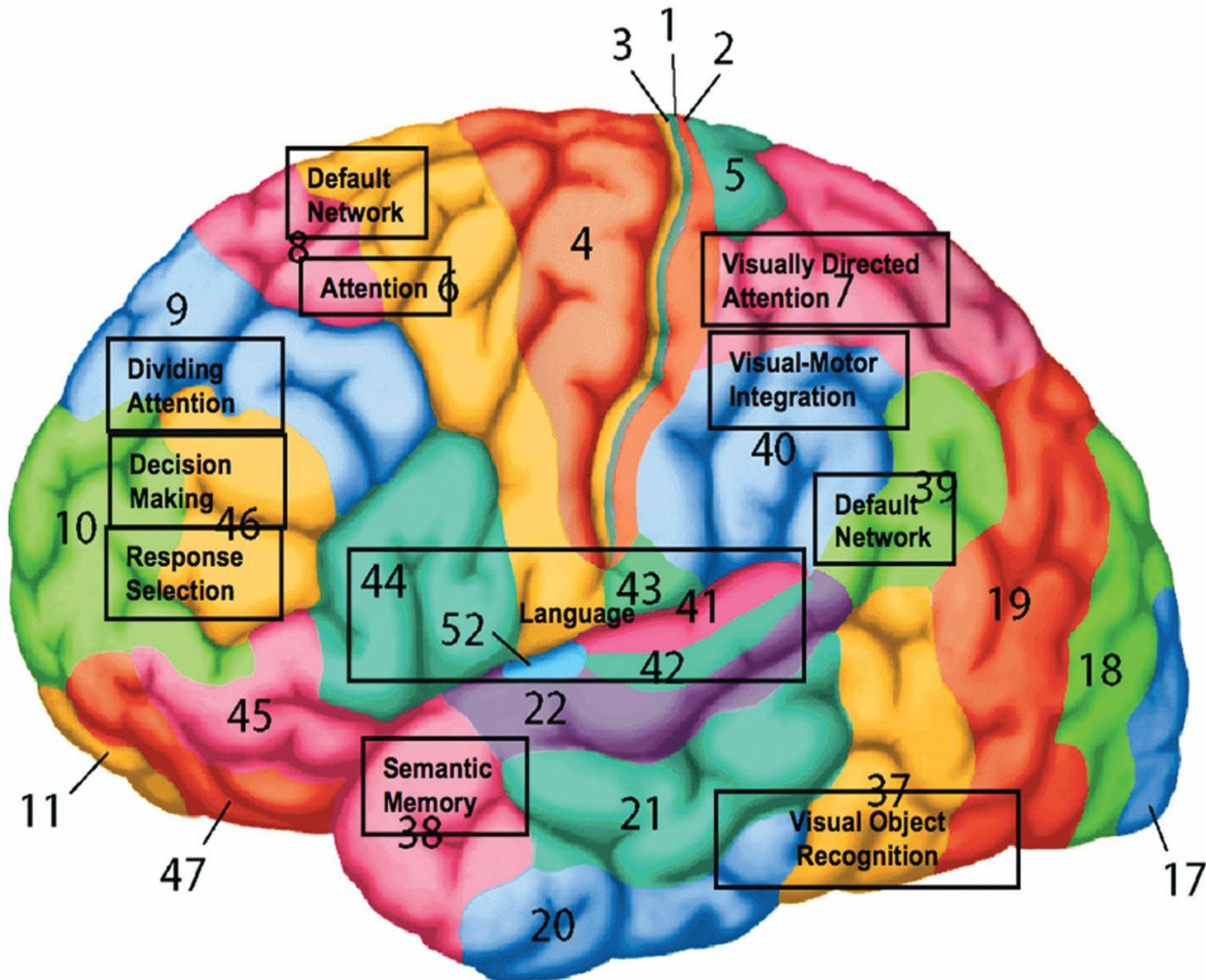


- *It is a complex process which consist of preserving & recalling events & helps organism to recognition & perform easily*
- *It consist of*
 - 1-registration*
 - 2-retention*
 - 3-recall*
- *Its divided to immediate,early,late*

Major Domains of cognition:



Major cognitive domain and their anatomical location



Reversible Dementia



- **D:** Depression, Drugs (Substance Abuse/Dependence)
- **E:** Emotion, Pseudodementia – from depression
- **M:** Metabolic
- **E:** Endocrine
- **N:** Nutrition(B1 2), NPH
- **T:** Trauma, Tumor, Toxic
- **I:** Infection, Ischemia
- **A:** Alcohol

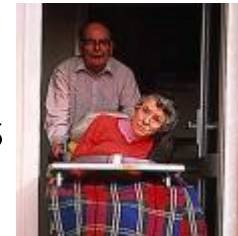


Disease in which dementia is associated with other neurologic signs but not other obvious medical diseases

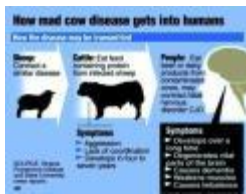
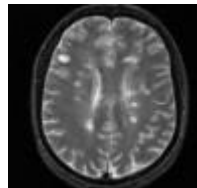
A- Invariably associated with other neurologic signs

□ HD

□ MS, and other demyelinating diseases



□ SSPE, SSE



Disease in which dementia is associated with other neurologic signs but not other obvious medical diseases

A- Invariably associated with other neurologic signs

- Cerebellar Degeneration



- PSP



- PD



- ALS



Disease in which dementia is associated with other neurologic signs but not other obvious medical diseases

B-Often associated with other neurologic signs

□ Vascular dementia and Binswanger

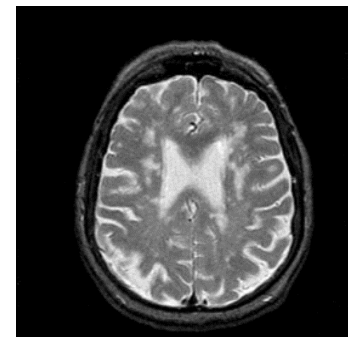
□ Brain Tumor



□ Trauma



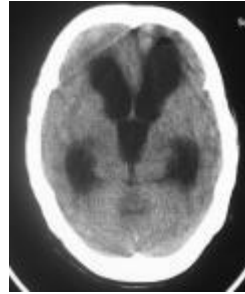
□ Lewy- body(Parkinsonism)



Disease in which dementia is associated with other neurologic signs but not other obvious medical diseases

B-Often associated with other neurologic signs

□ Hydrocephalus



□ PML

□ Granulomatous and vasculitides



Disease in which dementia is usually the only evidence of neurologic or medical diseases

□ AD



□ Pick disease



□ FTLD

Disease in which dementia is associated with clinical and laboratory signs of other medical diseases

- Drugs including CO
- Endocrine/Metabolic:
Hypothyroidism,



Cushing syndrome,

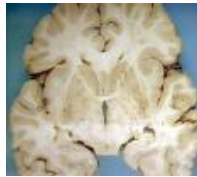


Disease in which dementia is associated with clinical and laboratory signs of other medical diseases

rarely hypopituitarism

dialysis dementia,

Wilson,



prolonged hypoglycemia or hypoxia

Disease in which dementia is associated with clinical and laboratory signs of other medical diseases

- Toxic: Arsenic, bismuth, gold, Mercury

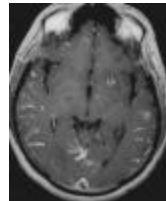
- Infection:

HIV,



Syphilis,

cryptococcosis



Disease in which dementia is associated with clinical and laboratory signs of other medical diseases

□ Nutritional:

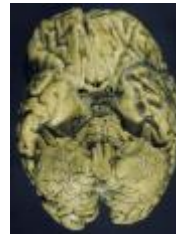
Pellagra,



B12,



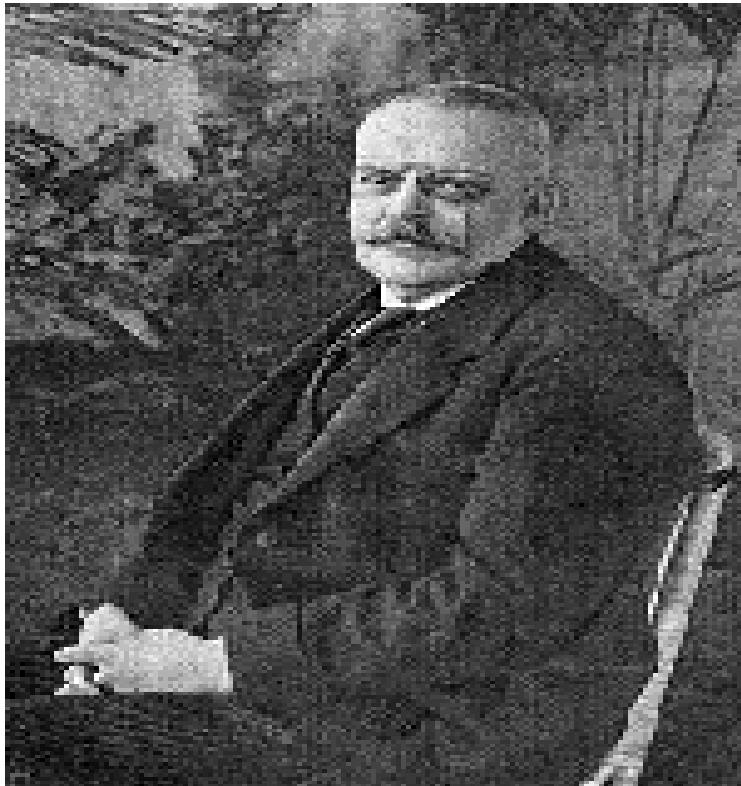
Wernicke-Korsakoff syndrome



What is Alzheimer Disease?

- Alzheimer Disease is the most common form of dementia.
- gradual onset and continuing decline of memory, changes in judgment or reasoning, and inability to perform familiar tasks.

Who was Alzheimer?



- Alois Alzheimer 1864-1915
- Professor of Psychology in Breslau
- In 1907 described case of a 57 year old and subsequent pathological findings

AD IN IRAN

- The total sample size of the 4 selected studies was 2781. The prevalence of Alzheimer's disease in the current study was estimated to be 2.3% in the population of 67-78 years old. Age, genetics, depression and hy-pertension were determined as the risk factors for Alzheimer's disease, while daily listening to music, meeting weekly with friends and daily intake of vitamin E were considered as the factors with protective role in this dis-ease.

Alzheimer Disease

- no known cause or cure for the disease, but researchers around the world are working to find them.
- Two types:
 - ▣ sporadic AD can strike adults at any age, but usually occurs after age 65
 - ▣ familial autosomal dominant Alzheimer Disease (FAD), which runs in certain families

Sporadic Alzheimer Disease

- makes up 90 to 95 percent of cases of the disease.
- People with this form may or may not have a family history of the disease.
- Children of someone with Sporadic Alzheimer Disease have a somewhat higher risk of developing AD, when compared to people with no family history of the disease.

Familial Autosomal Dominant Alzheimer Disease (FAD)

- FAD is rare and makes up only 5 to 10 % of all cases of Alzheimer Disease
- FAD is passed from generation to generation due to a dominant inheritance pattern
- If a parent has the mutated gene, each child has a 50 per cent chance of inheriting it

Causes and Risk Factors

- The cause of Alzheimer disease remains unknown
- More is discovered through research each year
- Likely a combination of heredity, environmental factors and internal factors

Causes of AD

- “ β -amyloid” is a type of glycoprotein that is abnormally concentrated in the brains of people with AD
- deposited in clumps called “plaques”
- enzymes called *secretases* and *pre-senilins* are involved in producing β -amyloid
- other proteins called “Tau” make up “tangles”

Amyloid hypothesis

- Not clear whether β -amyloid is a cause or a bystander in AD
- May cause inflammation, oxidation or other cascades that damage brain cells
- Has to “aggregate” or clump together to be toxic

Tau hypothesis


- Another protein called “Tau” is a normal part of cells
- Tau forms microtubules which transport nutrients within the cell
- In AD, “hyperphosphorylated Tau” makes up “neurofibrillary tangles” which damage cells

Risk Factors for AD

- Advancing age
- Family history of Alzheimer Disease
- Low education levels
- Head injury
- Down Syndrome
- Environmental factors.

aMCI: amnestic MCI



- 
- prevalence of MCI increases with age .
 - may be more common in men, in those who were never married, and in those individuals with APOE 4 genotype.
 - less prevalent in individuals with a greater number of years of education.
 - aMCI is more prevalent than non amnesic MCI(na MCI)

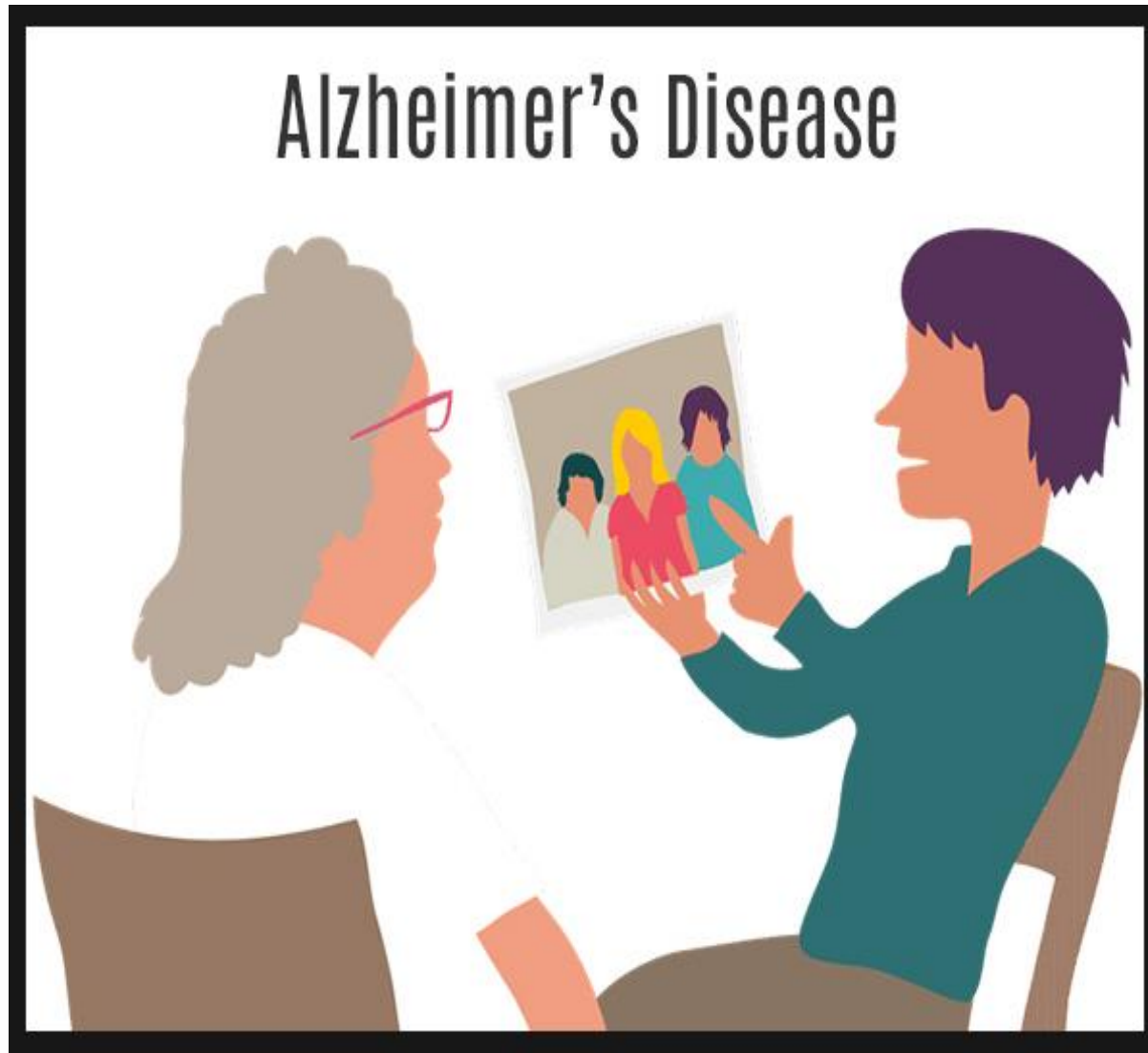
imaging in MCI:

- areas of atrophy in MRI:
 1. medial temporal lobe
 2. entorhinal cortex
 3. hippocampus
 4. posterior cingulate gyrus.
- amyloid-PET scans have shown increased beta amyloid in several areas:
 - 1.the lateral frontal cortex
 2. posterior cingulate cortex
 3. medial and lateral parietal lobes
 - 4.the lateral temporal lobe.

Consequences of aMCI:

- Progress to Alzheimer's disease at a rate of **10% to 15% per year**.
- - significantly greater than the population incidence rates for Alzheimer's disease, which is 1% to 2% per year.
- **Risk factors** for progression of MCI to dementias include:
 1. the degree of cognitive impairment at initial evaluation
 2. apolipoprotein E- ϵ 4(ApoE4) carrier status
 3. neuropathological changes,
 4. functional changes in the brain (functional imaging)
 5. changes in the cerebrospinal fluid status (CSF biomarkers).
- Note: multiple domain MCI is at greater risk of dementia, in comparison to single domain.

United States: 14% of people 71 years and older have dementia and AD accounts for 70% of them.



Main presentations of AD:

- Cognitive symptoms of AD most comm
- only include deficits in:
 - short-term memory
 - executive function
 - visuospatial function
 - praxis

Risk factors for AD:

- age (the greatest risk factor)
- lipoprotein gene E4 alleles (APOE4),
- low educational and occupational attainment,
 - family history of AD
 - moderate or severe traumatic brain injuries
 - cardiovascular risk factors
 - female to male ratio = 2

Cognitive decline in AD:

Memory, Early in the disease course, recent episodic memories are most affected, while memories from the distant past are usually spared.

As the disease progresses, all aspects of episodic memory become affected.

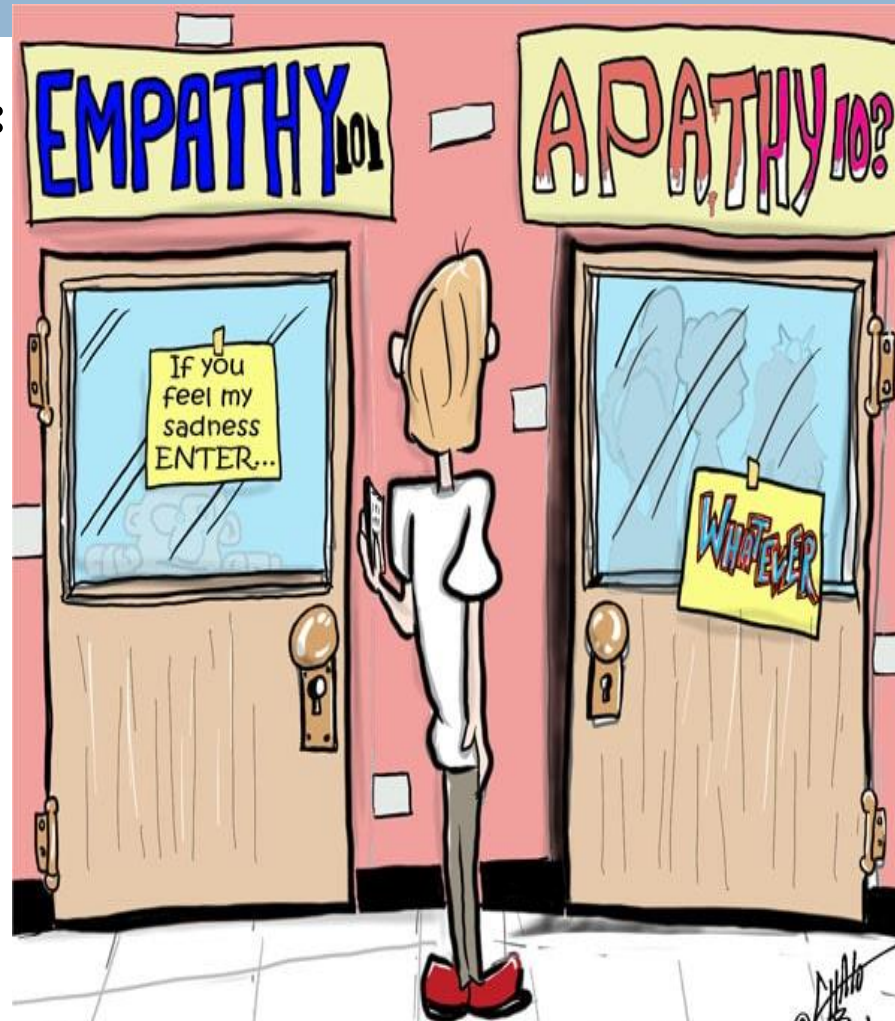
In contrast to episodic memory, working memory and semantic memory are preserved until later in the disease course.

Cognitive decline in AD

- **Language**, disturbance, especially word-finding difficulties, is a common early symptom in AD but is generally mild.
- Subtle decline in **visuospatial skills** likewise occurs in the mild dementia stages.
- **Executive dysfunction**, begins even earlier in the predementia stages.

Neuropsychiatric Symptoms

The earliest: :
apathy,
anxiety,
irritability.



#1629

MentalHealthHumor.com by Chato Stewart

Can You Learn Empathy? Or Like, Do you care, Whatever..

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Anxiety and irritability:

often provoked in situations that the patient finds challenging



Other psychiatric symptoms:

- mild to moderate **depressive** symptoms are also frequently present **early** on.
- Disturbances of **appetite and sleep**
- disinhibition
- alterations in perception (**hallucinations**) or thought
- (**delusions**) commonly occur in the **later** stages of dementia.
- **anosognosia** (i.e., lack of insight) often manifests **early** on and poses another difficult management problem.

ATYPICAL ALZHEIMER DISEASE VARIANTS:



- Frontal variant
- Posterior cortical atrophy
- Logopenic variant

FRONTAL VARIANT:

- substantial behavioral or personality changes that are out of proportion to the observed short-term memory loss.
- These patients are often profoundly impatient, irritable, impulsive, and disinhibited.
- On formal testing, they invariably show significant executive disturbances

Posterior cortical atrophy:

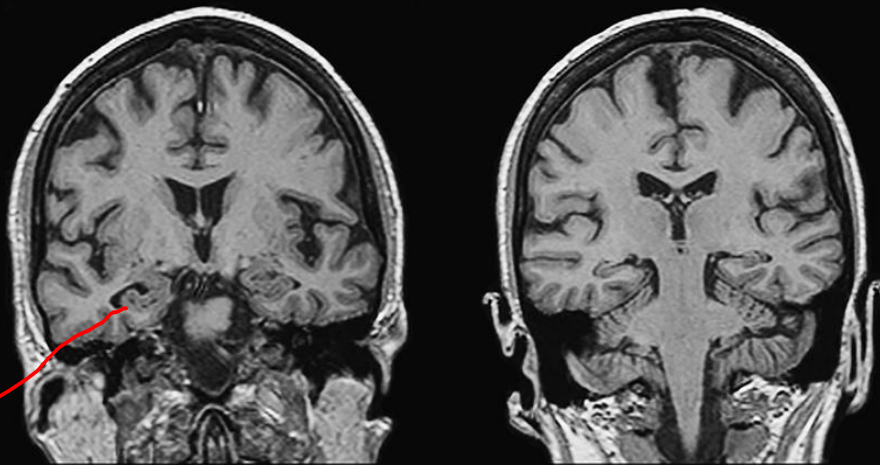
- Presents with **visuospatial dysfunction** often in the form of partial or full :
 - **Balint syndrome** (simultanagnosia, ocular apraxia, and ocular ataxia),
 - **Gerstmann syndrome** (acalculia, agraphia, right/left disorientation, and finger agnosia),
- Patients often develop constructional, dressing, and ideomotor **apraxia** early on in the presence of relatively preserved memory and insight.

Logopenic variant:

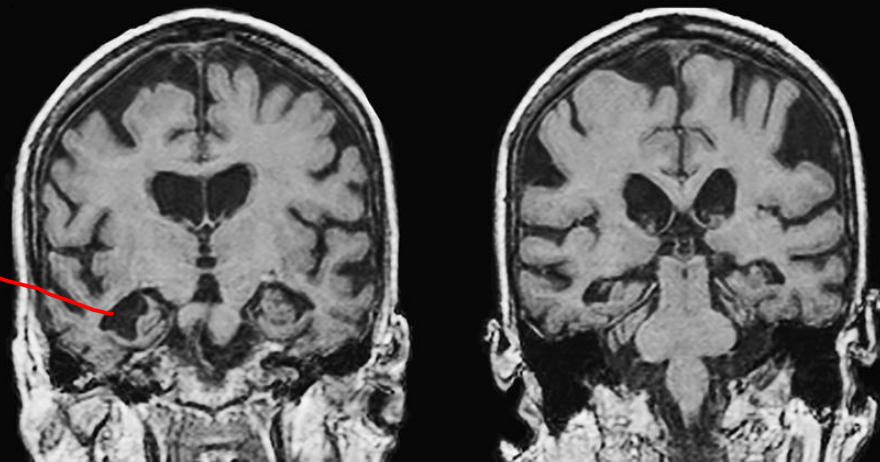
- early progressive language involvement,
- most often in the form of Logopenic aphasia with pronounced **anomic deficits and impaired repetition** but preserved grammar and syntax.

Structural imaging: Mesial temporal atrophy

Prodromal AD



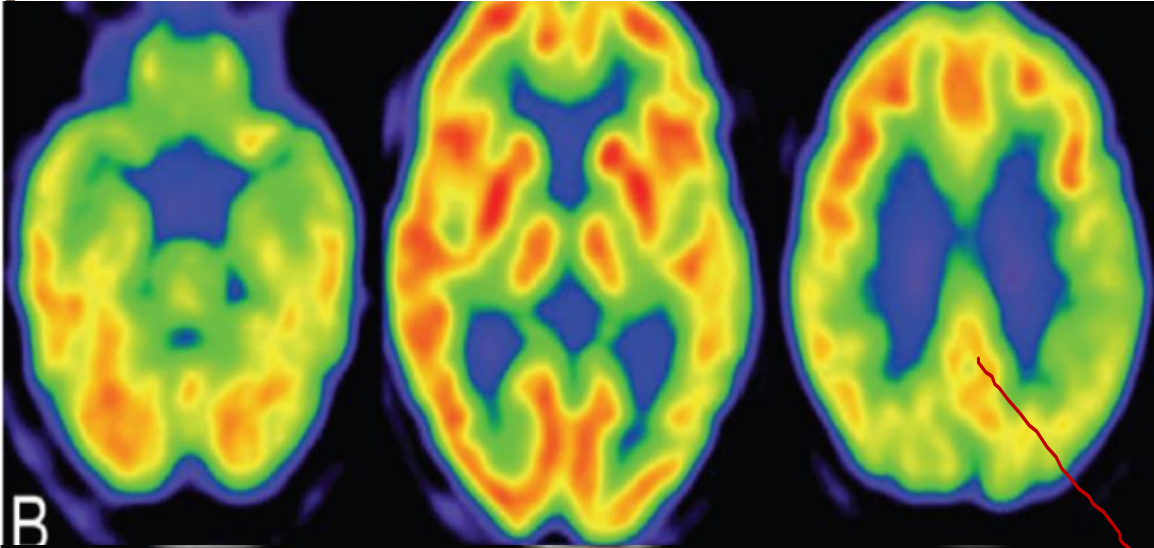
Advanced AD



MTA

FDG- PET: posterior hypometabolism

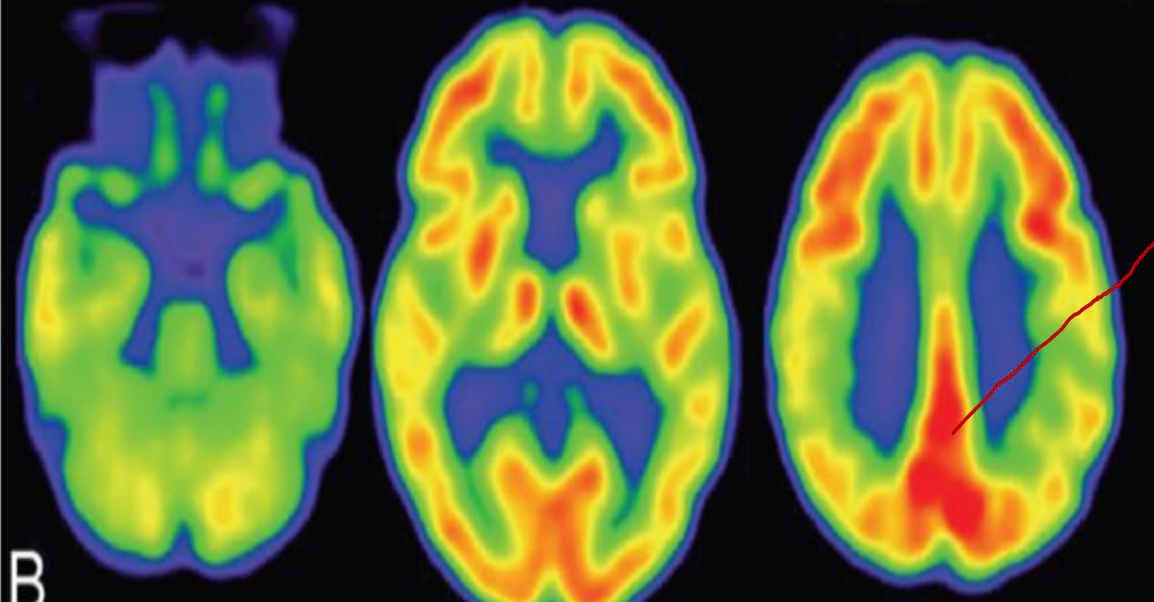
AD



B

AD

NL
aging



B

Post.
cingulate

NL aging

Management of AD :

- Diagnostic and prognostic counseling
- Management of coexisting behavioral and non-neurologic conditions.
- safety precautions
- social activities -
- exercise programs
- support groups
- - medications:
 - Cholinesterase inhibitors
 - Glutamate receptor modulators
 -

Acetylcholinesterase Inhibitors

- donepezil,
- rivastigmin,
- galantamine.
- should be started in patients with mild to moderate AD.
- showing some benefit on cognitive measures including memory and concentration as well as global and functional outcome measures.
- their therapeutic cognitive and functional effects seem to be modest in size and purely symptomatic-

Ache Inhibitors, side effects:

- **GI** : all three agents
- **Bradycardia and heart block** may occur, especially in patients with underlying cardiac conduction deficits or in those individuals taking medications that cause PR interval prolongation such as beta-blockers.
- If one agent causes intolerable side effects, another Ache I should be tried.

Glutamate Receptor Modulators

- Memantine : as an add-on to ongoing Ache I.
- beneficial effect on cognition, behavior, ADL, and global function.
- FDA : for the moderate to severe AD stages
(MMSE = 5 to 15)
- The main side effects : confusion and dizziness rare)

Off – labele:

- AChEI and memantine are frequently prescribed off-label

for **MCI** in the United States.

- Recent meta-analyses: no benefit of AChEI in MCI although a benefit for subgroups of patients remain undetermined.

- 2011 NIH guidelines : memantine as an option for managing moderate AD for people who cannot take AChEI and as an option for managing severe AD.

Medications for behavioral symptoms

- The first line : non pharmacologic techniques:
- A quiet, familiar environment with labels on doors and sufficient lighting in all rooms is important to reduce disorientation.
- Aggressive behavior should always be addressed with positive and clear language to reassure and distract the patient.
- Depressive symptoms : SSRIs
 - * may also ease anxiety and irritability.
 - *citalopram may be useful for agitation.

Antipsychotics

- agitation or disruptive behavior may require a neuroleptic for optimal therapeutic response.
- The newer 'atypical' antipsychotic medications (quetiapine, risperidone, olanzapine) are often used in low doses with careful titration.
- a black box warning for **all antipsychotics** in elderly.
- thus, judicious use and frequent reassessment of the therapeutic need.

THANK YOU

