

Normal Age Related Memory Loss vs. Dementia

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Goals

- Distinguish Between Normal Brain Aging and Disease
- Brain Health Practices
- Treatments for Dementia

Distinguish Between 4 Entities

Age Associated Memory Impairment

Mild Cognitive Impairment (MCI)

Dementia

Dementia of Alzheimer's Type

Age Associated Memory Impairment

- ❑ Slowing of Processing *Speed*
- ❑ Vocabulary, general intelligence and ability to learn not affected
- ❑ *Old dogs can learn new tricks, it just takes longer*



Mild Cognitive Impairment

- Memory loss documented on examination
- No functional impairment of daily living
- Some remain stable
- 16% progress to Alzheimer's each yr

- *Is this a Senior Moment ? Forgot your password?*

Dementia

- General Term
- Decline in mental ability severe enough to interfere with daily life

Dementia is common in elderly

- 2023 5.8 million
- 2050 14 million (Baby Boomers age and live longer)
- 1/10 people >65
- 1/2 people >85
- >\$100 Billion per year
- Huge Caregiver Burden

Many Types of Dementia

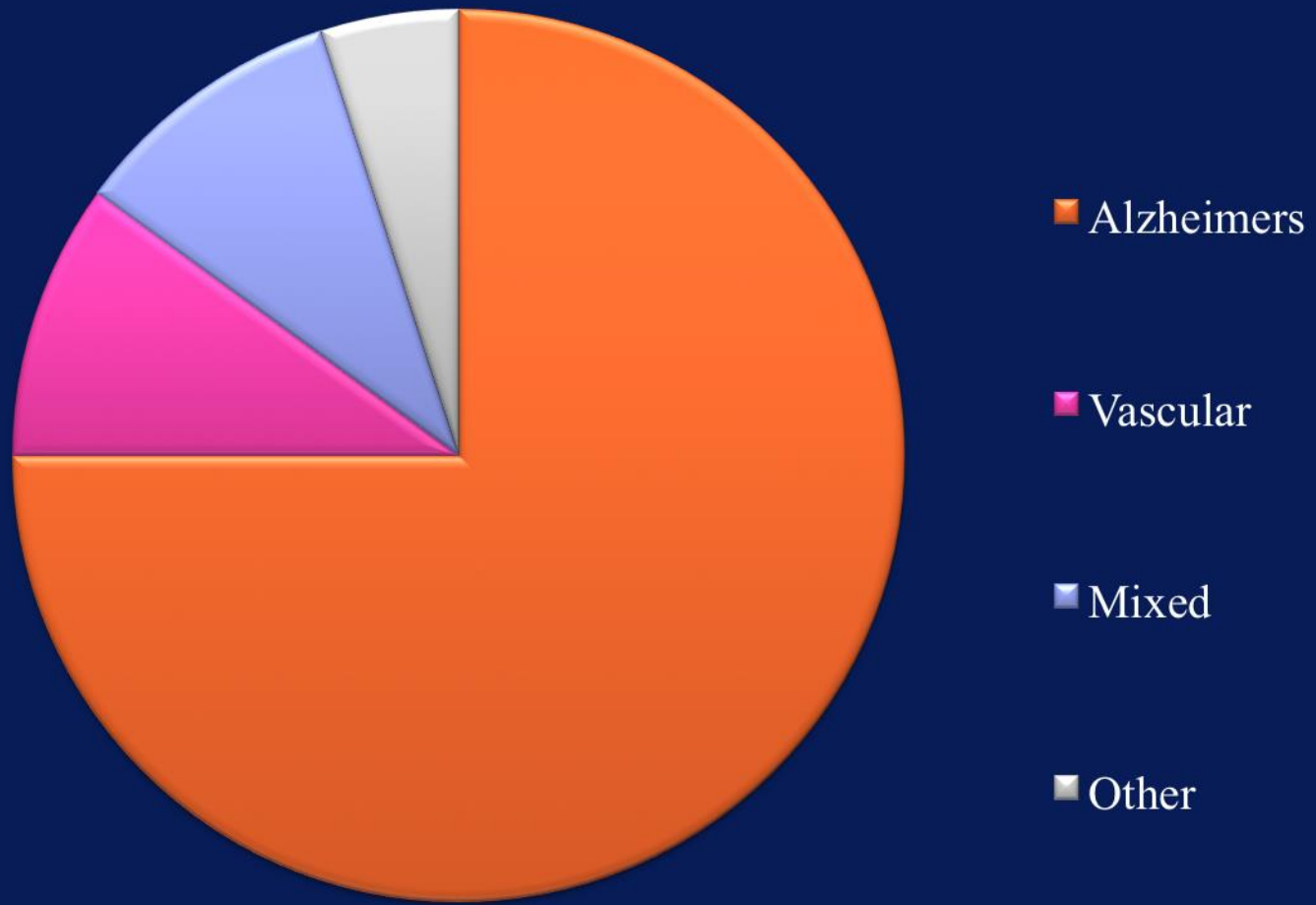
- Alzheimer's

- Vascular-Stroke

- Mixed

- Parkinson's, Lewy Body, Frontal Lobe, Infections, Trauma, Anoxia, tumors, alcohol,.....

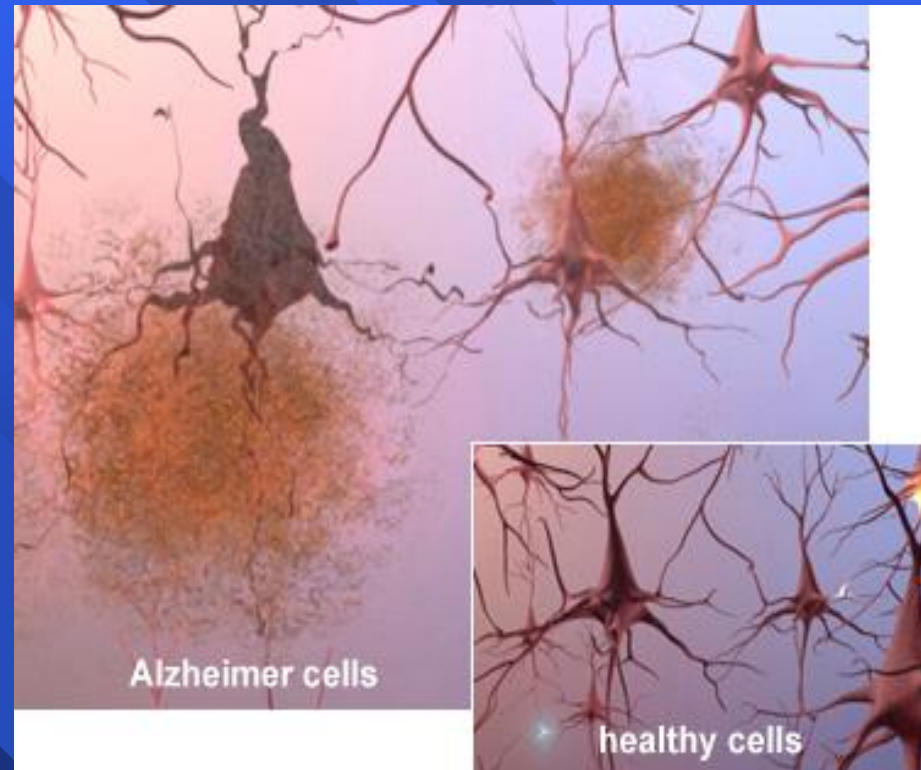
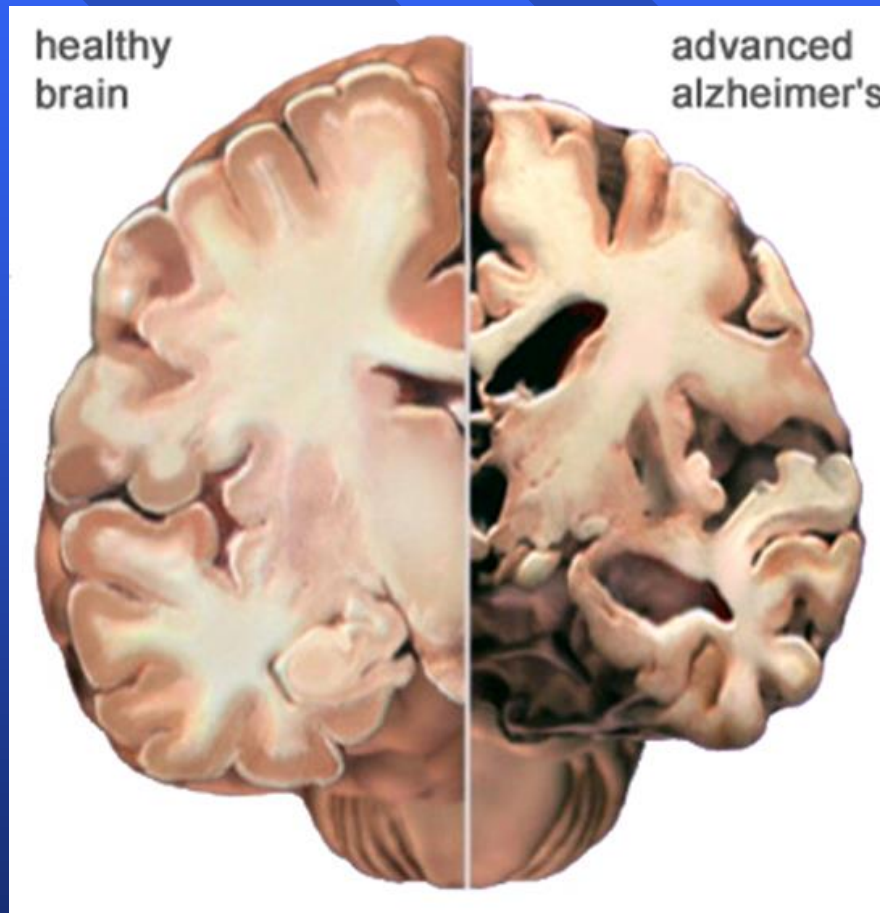
Dementia Types



Alzheimer's Disease

- Most common type of Dementia
- Pathophysiology
 - Loss of brain cells (shrinking)
 - Abnormal accumulation of protein/plaques/tangles
 - Alteration of neurotransmitters (acetylcholine, dopamine, norepinephrine, glutamate & serotonin)

Brain changes



Cause (s)?

- Unknown
- Down's Syndrome early 40-50 y/o
- Everyone, if live long enough
- Rare families (<2% cases) Apo E-4 on chromosome 19 (25% normals have copy of Apo E 4 too)

Dementia of Alzheimer's

- Documented problems with MEMORY and at least 1 other area of cognition (orientation, calculation, language, construction, problem solving)
- Progressive, terminal
 - (50% die within 5 yrs dx)
- End stage affects physical function too: talking, walking, eating, continence
- Pneumonia most common cause of death

Vascular Dementia

- Blockage or Bleeding of vessels (small & large)
- Strokes: Single, Lacunar, Multi-infarct
- One time event or multiple events over time
- Impairment correlates to part of brain that lost blood supply by interruption of blood vessel
- Stable function once event has passed

Vascular Dementia Course

- Functional Impairment correlates to part of brain that has lost blood supply by interruption of blood vessel
- Stable function once event has passed or new event

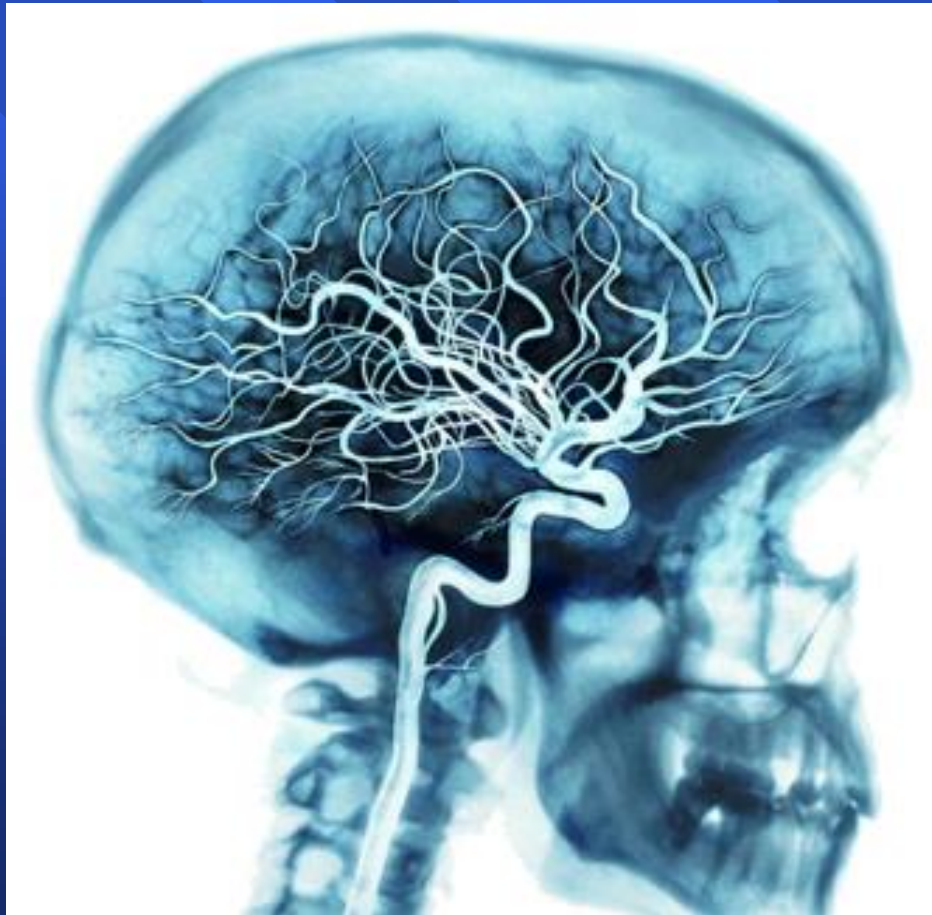
Causes of vascular-stroke

- Aneurysm
- Old / weak arteries
- Stress on arteries—bleed or clot
 - High blood pressure
 - Plaque on inside of arteries
 - Clots from elsewhere

Can Other Things Affect Memory?

- Physical disease: deafness, aphasia, and hypothyroidism
- Depression, thyroid disease, COPD
- Meds: anticholinergics (benadryl), pain medicines, sleeping tablets, oxygen (too low or too high)
- Pseudo-dementia (Depression)
- Distractions—Sandwich generation
- Sleep Deprivation

Each heartbeat, 20 -25% of blood goes to brain
where billions of cells use ~ 20% Oxygen
Your brain uses 50% fuel & oxygen thinking hard



- Can we improve brain health?
- Can we prevent / treat dementia?

Vascular Dementia Prevention

- Some diseases raise risk of vascular dementia
 - Diabetes, Hypertension, Heart Disease
- Control is key for prevention
 - Keep blood sugars down, bp down, lipids down
 - Don't Smoke
 - Don't Drink Excessive Alcohol
 - Exercise

Exercise Improves Mental Alertness

- All Ages
- Afternoon “tired-nap” time
 - Exercise better than snack better than working through it



Healthy Diet

- Healthy balanced diet: whole foods rich in vitamins, nutrients, & DHA omega-3 fatty acids protects brain just like heart
- Healthy diet lower cholesterol, Blood Sugar and protect your arteries to brain



Sleep deprivation impairs concentration and memory

- Reduce performance, memory
- Increase injury
- Drowsy driving responsible at least 100,000 MVA's, 71,000 injuries, 1,550 deaths / year
- 2x accidents on the job / home
- Check for sleep apnea



Do Brain Exercises work ?

- n NY Time Cross Word Puzzle
- n Sudoku
- n Socialization
- n Reading
- n Playing Music

3			8		1			2
2		1		3		6		4
			2		4			
8		9				1		6
	6						5	
7		2				4		9
			5		9			
9		4		8		7		5
6			1		7			3

The Evidence.....

- People who are mentally active do better
 - Own a pet, take care of plants, socialize, learn new things, puzzles, music, exercise

- WHY? Chicken or the egg?



- *Bottom Line: The more you do the better you will be but.....*

CAVEAT from the Institute of Medicine

- Be Careful of Products that Claim to Improve Cognitive Functioning
 - Vitamin E
 - Ginkgo biloba
 - ? Computer based brain training games
- No evidence that any will prevent / cure dementia

Born Loser



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Brain Health

- Genes: Pick your parents well
- Treat medical conditions that affect your blood vessels/ heart as they protect the vessels in your brain

Healthy Brain Choices

- ❑ Eat a healthy diet
- ❑ Drink alcohol moderately
- ❑ Don't smoke
- ❑ Get active
- ❑ Sleep 7-8 hours / night
- ❑ Learn new things, socialize
- ❑ If HTN, DM control bp, wt, blood sugar
- ❑ Check meds with physician / pharmacist

Medicines for Dementia

- **Acetylcholinesterase inhibitors**
(Galantamine, Rivastigmine, Donepezil)
(Reminyl, Exelon, Aricept)
- **NMDA Receptor Antagonist** (blocks glutamate) (Memantine) (Namenda)
- **Anti-amyloid Antibody infusions**
Aducanumab, Lecanemab

Acetylcholinesterase Inhibitors

Prevents breakdown of acetylcholine

- FDA approval 1996
- Pill / inexpensive
- Mixed reviews clinical improvement
- Can be used in early or late disease
- Side effects (Nausea, Vomiting, Diarrhea, Anorexia, Weight loss, Muscle cramps)

NMDA Receptor Antagonist (Memantine) (Namenda)

- FDA approved 2003
- Moderate to late disease
- Pill, Mixed reviews of helpfulness
- Side effects: dizziness, confusion, agitation constipation

After 20 years, 2022

New Kid on Market: Aducanumab

- FDA approved - quite controversial
- MCI or Early Disease
- Reduces Amyloid / Unclear clinical benefit
- Medicare covers IF enrolled in drug trial
- Expensive \$56,000 / yr (\$28,000 Medicare)
- Serious side effects
 - Amyloid-related imaging abnormalities (ARIA) : swelling of brain (temporary), small areas of bleeding in the brain, h/a, falls

New kids on Market

Recommend **against** routine use with
Alzheimers Disease (Grade 2C)

Questions ?

