

# Alzheimer's Disease

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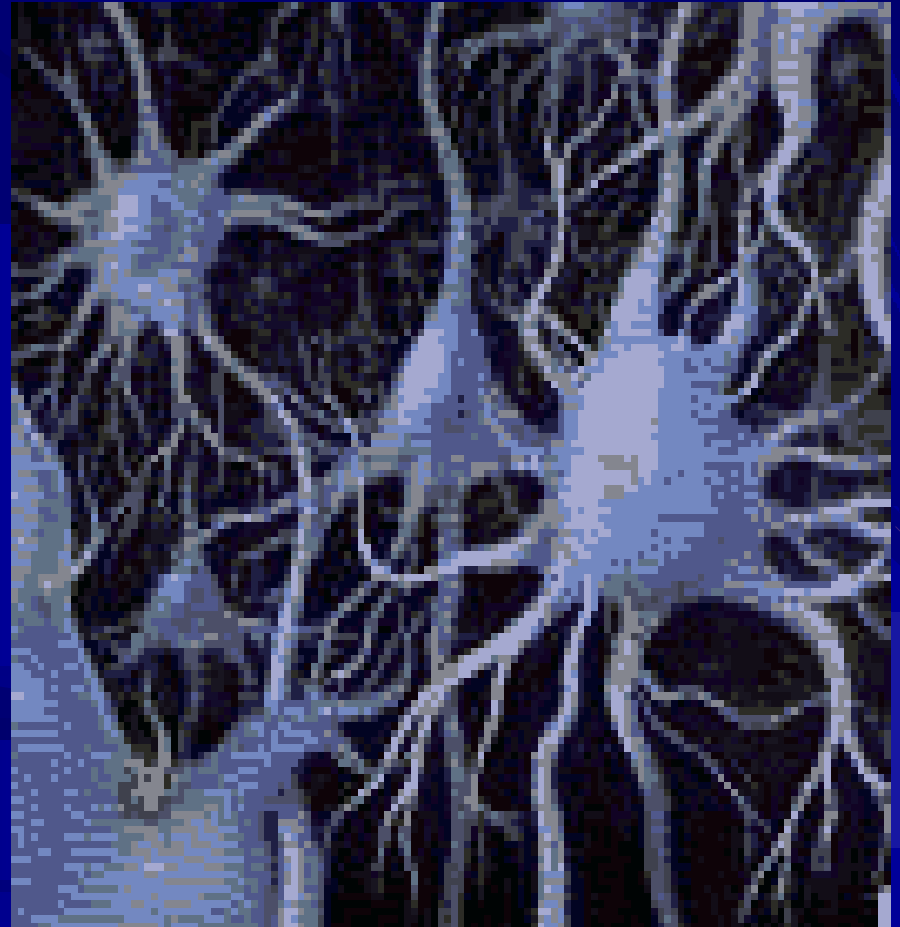
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# What is Alzheimers?

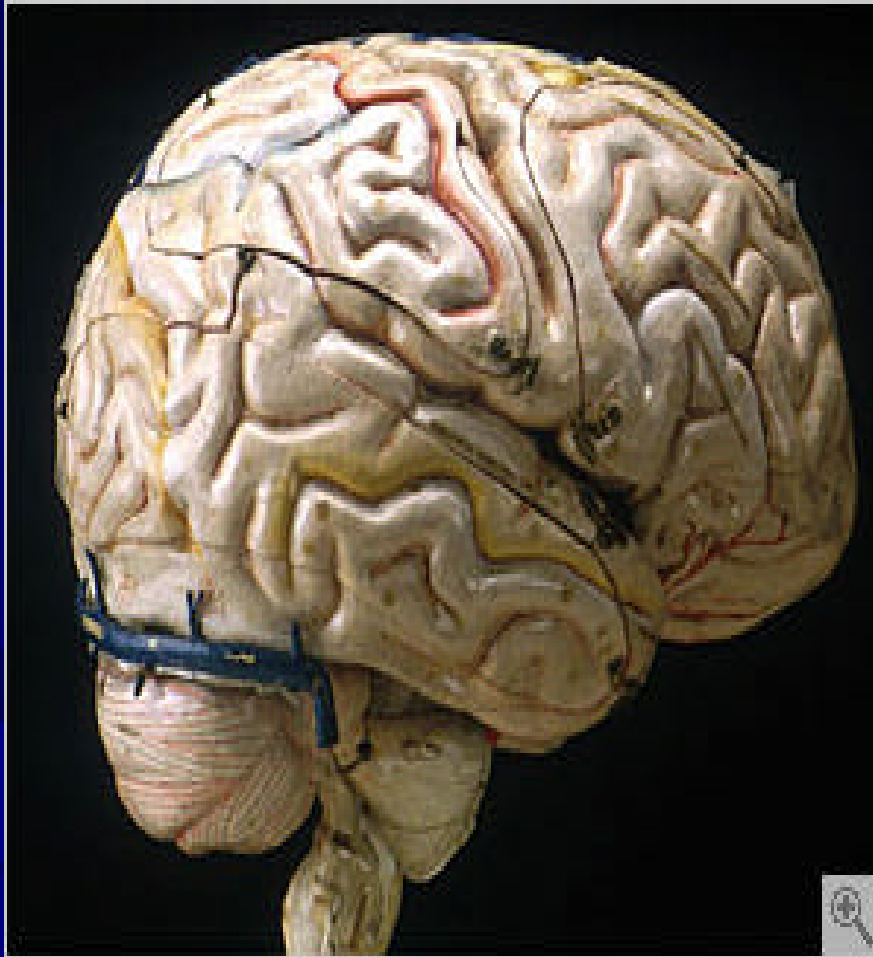
- Named after Alois Alzheimer (1864-1915)
- Gave a speech in 1906 regarding “a peculiar disease process of the cerebral cortex.”

# Alzheimer's defined

- a degenerative disease of the central nervous system characterized especially by premature senile mental deterioration (Merriam-Webster Dictionary Online)



# Who has Alzheimers?



- Over 10% of people at the age of 65 or older
- Over 50% of people age 85 and older
- More women have it than men.

(1)

# How do you get Alzheimers?

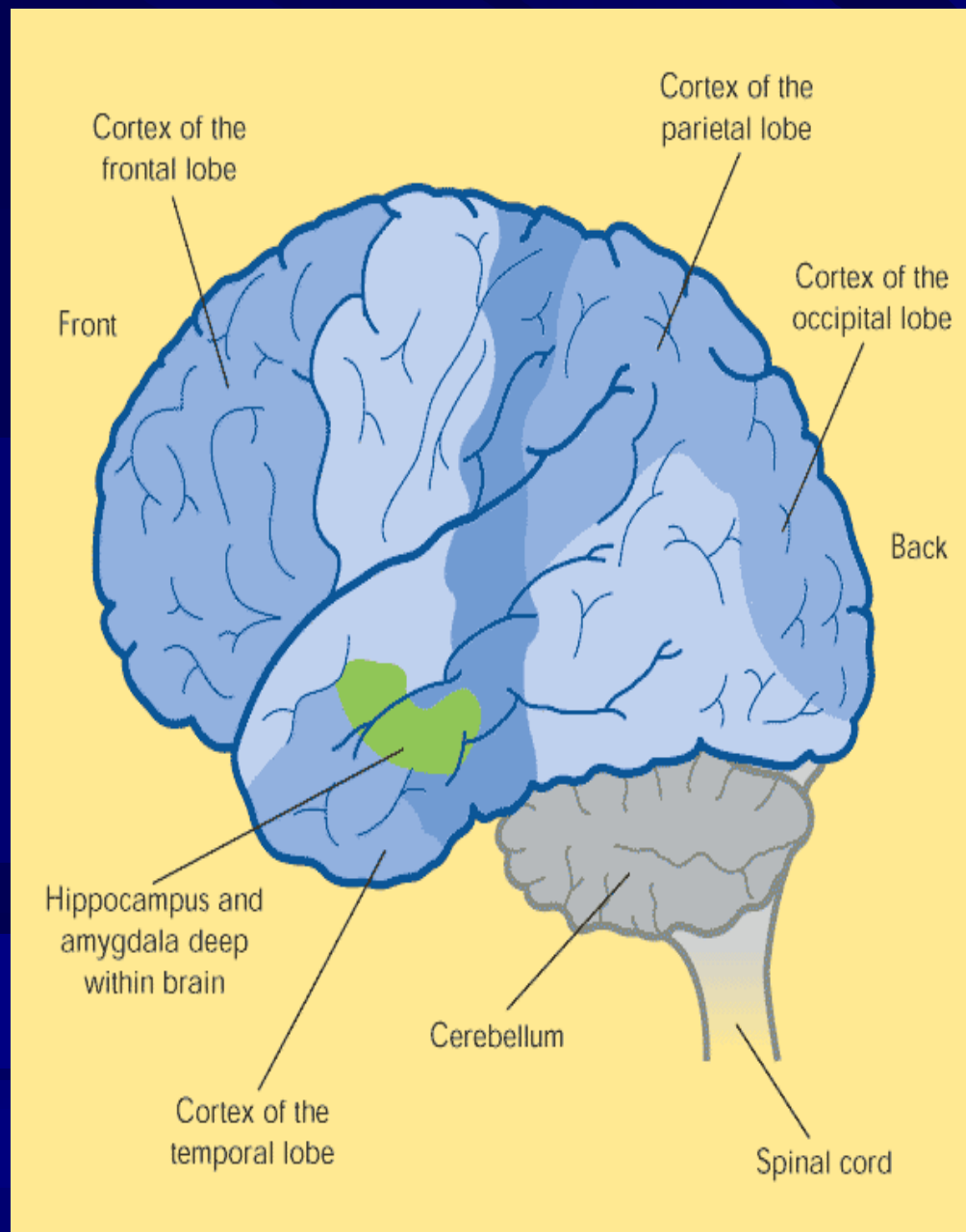
- Scientists have found genes on specific chromosomes that are linked to Alzheimers. It is genetic.
- Chromosomes that are related to Alzheimer's in different forms are: 21, 19 (which produces apoE), 14, 1,... 12 or 13 relate to a form of AD that occurs after 70. This just touches the tip of the iceberg in regards to genetics.
- Studies show a link of high cholesterol and high blood pressure to Alzheimers.

(2 &4)

# Alzheimer's continued...

- Plaques-clumps of protein fragments that gather around cells are found in Alzheimers patients.
- Tangles-clumps of altered proteins inside cells are found in the brain of Alzheimers patients.
- Plaques and tangles can only be seen after death.
- Low levels of acetylcholine

(2)



■ Brain areas in the cortex where nerve cells are damaged and dying. The darker the shade of blue, the greater the damage. Many of the areas most affected are memory centers.

(4)

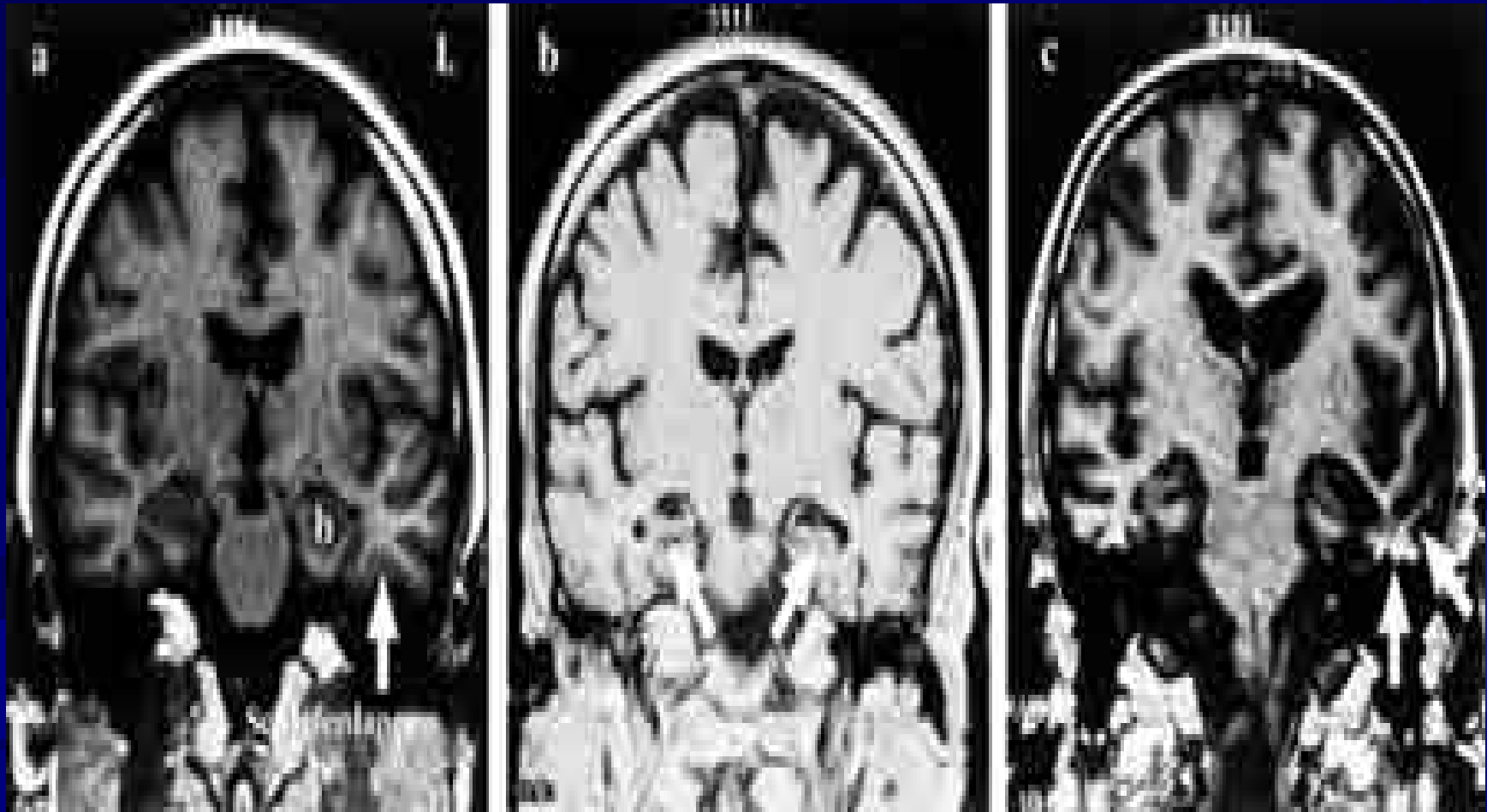


- Alzheimer's disease causes gradual loss of brain cells
- Leading cause of dementia
- Causes shrinkage of the brain

(5 & 2)



Fig. 5: MRI brain scan images of: a) a normal brain showing the hippocampus (h) and temporal lobe structures (arrow); b) a patient with early Alzheimer's disease showing hippocampal shrinkage (arrows) and c) a patient with semantic dementia showing profound shrinkage of the left temporal lobe (arrow), but sparing the hippocampus.



- All in all, Alzheimers is something that researchers are still learning about.
- The symptoms may be helpful in understanding whether or not you or someone you love has Alzheimers



# Causes and Symptoms of Alzheimer's

# Causes

- Scientists do not yet fully understand what causes AD. There probably is not one single cause, but several factors that affect each person differently.
- Age is the most important known risk factor for AD. The number of people with the disease doubles every 5 years beyond the age of 65.

# Causes

- Family History is another risk factor. Scientists believe that genetics may play a role in many AD cases.
- One risk factor for the kind of AD that occurs later in life is a protein called apolipoprotein E (apoE).

# apoE

- Everyone has apoE, which helps carry cholesterol in the blood.
- The apoE gene seems to have 3 forms: one protects a person from getting AD; another seems to make a person more likely to develop AD.
- Scientists still need to learn a lot more about what causes AD. Other factors being investigated include education, diet, environment, and viruses.

# Symptoms

- Posthumous discovery of amyloid plaques and neurofibrillary tangles.
- At first, the only symptom may be mild forgetfulness. People have trouble remembering recent events, activities, or the names of familiar people or things. Simple math problems may become hard to solve.
- With time, symptoms become serious enough to seek medical help. People may forget how to perform simple tasks like brushing teeth and combing hair. They no longer think clearly and begin to have problems speaking, understanding, reading or writing.
- Later, people may become anxious or aggressive, or wander away from home. Eventually, patients need total care.

# Seven Warning Signs of AD

- Asking the same question over and over again.
- Repeating the same story, word for word, again and again.
- Forgetting how to cook, how to make repairs, or how to play cards – activities that were previously done with ease and regularity.
- Losing one's ability to pay bills or balance a checkbook.
- Getting lost in familiar surroundings, or misplacing household objects.
- Neglecting to bathe, or wearing the same clothes over and over again, while insisting that they have taken a bath or that their clothes are still clean.
- Relying on someone else to answer questions or make decisions that they previously would have handled themselves.



# Common changes in mild AD

- Loses spark or zest for life – doesn't start anything.
- Loses recent memory without a change in appearance or casual conversation.
- Loses judgment about money.
- Has difficulty with new learning and making new memories.
- Has trouble finding words – may substitute or make up words that sound like or mean something like the forgotten word.
- May stop talking to avoid making mistakes.
- Has shorter attention span and less motivation to stay with an activity.
- Easily loses way going to familiar places.
- Constantly checks, searches, or hoards things of no value.

# Common Changes in Moderate AD

- Changes in behavior, concern for appearance, hygiene, and sleep may become more noticeable.
- Mixes up the identity of people: thinking a son is a brother or a wife is a stranger.
- Poor judgment causes safety issues when alone: may wander and risk exposure, poisoning, falling, self-neglect and exploitation.
- Continuously repeats stories, favorite words, statements, or motions.
- Has trouble following written notes or completing tasks.
- May be able to read, but can't formulate the correct response to a written request.
- May think a mirror image is following or a television story is happening to him.
- Naps frequently or awakens at night thinking it is time to go to work.
- Needs help finding the toilet, using the shower, remembering to drink, or dressing for the weather or occasion.

# Common Changes in Severe AD

- Doesn't recognize self or close family.
- Speaks in gibberish, is mute, or is difficult to understand.
- May refuse to eat, chokes, or forgets how to swallow.
- May repetitively cry out, pat, or touch everything.
- Loses control of bowel and bladder.
- Loses weight and skin becomes thin and tears easily.
- May look uncomfortable or cry out when transferred or touched.
- Forgets how to walk or is too unsteady or weak to stand alone.
- Sleeps more.
- May groan, scream, or mumble loudly.
- Needs total assistance for all activities of daily living.

# Treatment and Prevention of Alzheimer's Disease

# Alzheimer's Treatment

- There is no cure for Alzheimer's disease at this time.
- FDA approved drugs for Alzheimer's that stabilize the condition
- Alternative Treatment
- Preventative treatment



# FDA Approved Drugs

- Cognex (tacrine) and Aricept (donepezil) - cholinesterase inhibitors, cholinesterase is an enzyme that breaks down the neurotransmitter acetylcholine
- Exelon (rivastigmine) – prevents the breakdown of acetylcholine and butyrylcholine
- Reminyl (galantamine) – prevents acetylcholine breakdown and stimulates nicotinic receptors to release more acetylcholine
- Namenda (memantine) – newest drug, it blocks excess amounts of glutamate, that can damage or kill nerve cells in the brain

# Alternative Treatment

- Antioxidants: selegiline and vitamin E – may slow down oxidative reactions that damage neurons
- Drugs that fight inflammation – indomethacin and prednisone
- Extract of Ginkgo biloba (EGb 761) – may fight inflammation, acts as an antioxidant and affects levels of neurotransmitters.

# Alternative Treatment

- Huperzine A – a diet supplement extracted from moss that has similar affects to the FDA approved drugs.
- Phosphatidylserine – a lipid that is a component of cell membranes of neurons. Researchers took phosphatidyleserine from cows in hopes of protecting human cell membranes from degenerating.
- Estrogen – can improve brain function in women



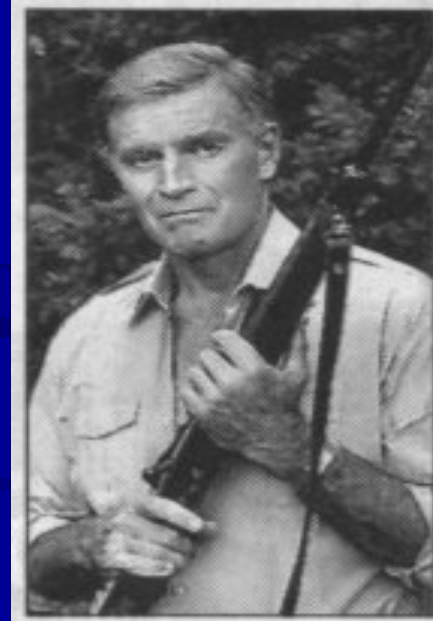
# Preventative Treatment

- Keep the mind active – people with active minds are less at risk
- Diet – Keep a high antioxidant/low saturated fat diet. More Fish, Chicken, Fruits, Vegetables, and Red wine.
- Keep an Alzheimer's patient as physically healthy as possible.
- Doctors try to keep Alzheimer's patients free of other illnesses which progress Alzheimer's



# Summary

- Alzheimer's Defined
- Who is at risk?
- Causes and Symptoms
- Treatment
- Outlook



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