Alzheimer Disease Cheat Sheet

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Etiology

• Cortical atrophy and loss of neurons

Risk Factors

• **Age:** prevalence doubles for every decade after age 60
• **Family history:** genetic mutations
• **Gender:** more common in women
• **Exposures:** head trauma, high cholesterol, lack of mental stimulation

Pathogenesis

• Neurofibrillary tangles and amyloid plaques
• Amyloid plaques form from imbalance of production and removal of amyloid beta
• Decreased cholinergic transmission
o Decreased acetylcholine production
• Results in the noticeable atrophy

Manifestations

Alzheimer disease has also been described using four words that begin with A:

Amnesia Aphasia Apraxia Agnosia

• Loss of short-term memory
• Difficulty with language
• Behavioral changes
• 7 stages of progressive degenerative changes

Complications

• Related to declining cognitive function
• Bowel and bladder incontinence
• Depression
• Falls [hip fractures @ high risk]
• Infections
• Malnutrition and dehydration [forgetting to eat & drink]

Diagnosis

• Not definitive until after death
Requires a brain biopsy or autopsy
• **Presumptive diagnosis based on:**
Review of symptoms with patient and family
Cognitive tests (MMSE, mini-cog, etc.)
Imaging: CT, MRI, PET
To rule out other pathology

Treatment

• No definitive treatment or cure
• Medications may slow progression
• Other meds to control some symptoms (depression, sleep disturbances, agitation)

Stages of Alzheimer Disease Progression

Preclinical: changes in brain that do not result in noticeable signs/-symptoms	**Stage 1 (mild)** detected w/ screening tool
Stage 2 (moderate) pronounced changes	**Stage 3 (Severe)**

• Preclinical

changes in brain that do not result in noticeable signs/symptoms

o can last for years

Stage 1 (mild)

Can be detected w/ the use of screening tools

o Coming up with the right word or name.
o Remembering names when introduced to new people.
o Having difficulty performing tasks in social or work settings.
o Forgetting material that was just read.
o Losing or misplacing a valuable object.
o Experiencing increased trouble with planning or organizing.
o If identified, this is the stage where they should be placing things in order in the event it progresses fast
Financial situation, POA, medical directives, living situation, etc.

Stage 2 (moderate)

o Being forgetful of events or personal history.
o Feeling moody or withdrawn, especially in socially or mentally challenging situations.
o Being unable to recall information about themselves like their address or telephone number, and the high school or college they attended.
o Experiencing confusion about where they are or what day it is.
o Requiring help choosing proper clothing for the season or the occasion.
o Having trouble controlling their bladder and bowels.
o Experiencing changes in sleep patterns, such as sleeping during the day and becoming restless at night.
o Showing an increased tendency to wander and become lost.
o Demonstrating personality and behavioral changes, including suspiciousness and delusions or compulsive, repetitive behavior like hand-wringing or tissue shredding.

Stage 3 (Severe)

o Require around-the-clock assistance with daily personal care.
o Lose awareness of recent experiences as well as of their surroundings.
o Experience changes in physical abilities, including walking, sitting and, eventually, swallowing
o Have difficulty communicating.
o Become vulnerable to infections, especially pneumonia.

Drugs Used to Treat Alzheimer Disease

Cholinesterase Inhibitors

Prototype: **Donepezil**

prevent the breakdown of the neurotransmitter acetylcholine

o Reversible cholinesterase inhibitor that causes elevated levels of acetylcholine (ACh) in the cerebral cortex which slows the neuronal degradation of Alzheimer disease
o Not a cure it ONLY improves cognition & memory
o Slows effects of Alzheimer's but will NOT stop the disease
o Adverse effects: insomnia, fatigue, rash, N/V/D, dyspepsia, abdominal pain, muscle cramps

N-Methyl-D-aspartate (NMDA) Antagonist

Protype: **Memantine**
o Memantine is used to treat moderate-to-severe Alzheimer's disease, especially for people who are intolerant of or have a contraindication to cholinesterase inhibitors
o A dysfunction of glutamatergic neurotransmission, manifested as neuronal excitotoxicity, is hypothesized to be involved in the etiology of Alzheimer disease.
Adverse effects:
o Confusion
o Dizziness
o Drowsiness
o Headache
o Insomnia
o Agitation
o Hallucinations
o Less common adverse effects include vomiting, anxiety, hypertonia, cystitis, and increased libido.

antagonizes (inhibits) NMDA (glutamate) receptors