

76 year-old female Recent memory loss

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Clinical Statement

- A 76 y.o. man presents with his daughter who describes recent memory loss of her father. The man acknowledges his problems but assigns no importance to them. However he describes a recent episode when he was driving home and suddenly lost his way, although he was taking the usual route.
- The patient has been under chronic treatment for hypertension and high cholesterol levels for 20 years.

- He has been otherwise healthy. He is a widow, completed primary education and had worked as a mechanic, retired 8 years ago. Physical examination is unremarkable.
- Neuropsychologic tests are inconclusive, showing only some borderline memory alterations.

What is the most likely preliminary diagnosis?

- A) Vascular dementia.
- B) Early degenerative dementia (Alzheimer's type).
- C) Benign memory loss.
- D) Brain tumor.

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Comments:

- At early stages, degenerative dementia of Alzheimer's type could be difficult to distinguish clinically from "normal" or "benign" memory loss due to aging.
- However, additional features such as missing the way home should raise suspicion of dementia.
- Neuropsychologic tests can be indeterminate at early stages of dementia.
- Nevertheless, vascular dementia can not be ruled out and additional examinations are needed.

What would you do next?

- A) Order a brain SPECT.
- B) Order a CT scan.
- C) Order a MRI scan.
- D) Order a Doppler carotid ultrasound.

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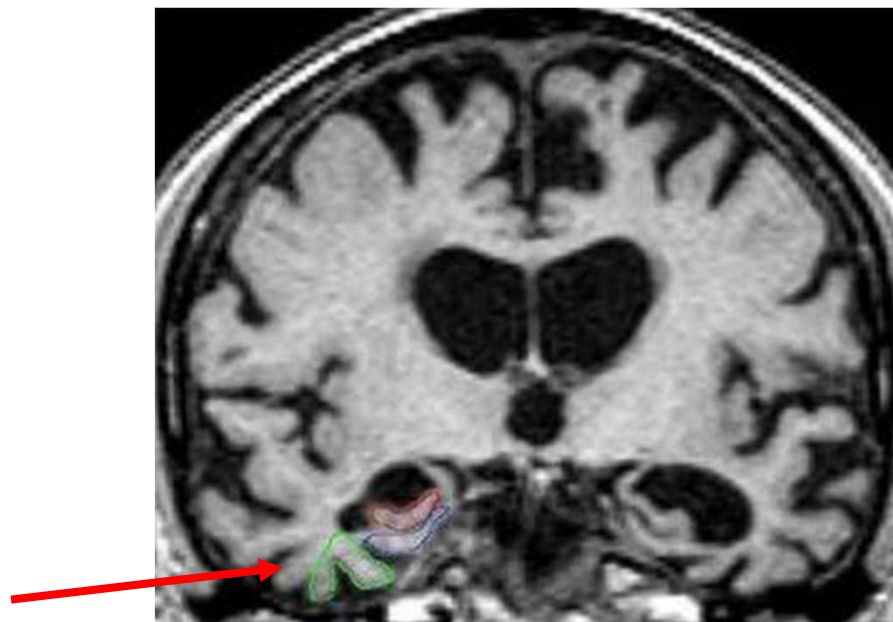
- A) Order a brain SPECT.
- B) Order a CT scan.
- C) *Order a MRI scan.***
- D) Order a Doppler carotid ultrasound.

Comments:

- MRI imaging can rule out ischemic lesions, as well as other anatomic abnormalities such as hydrocephalus, tumor, etc. Also, the test can give some clues of dementia based on regional selective brain atrophy.
- CT is less sensitive to detect ischemic lesions, and Doppler US would be irrelevant in this clinical setting.
- SPECT should not be indicated before anatomic imaging is performed.

MRI scan

Coronal slice



Comments:

- MRI shows cerebral atrophy.
- There is temporal lobe atrophy - a sign of Alzheimer's disease (arrow).
- However, the finding is not specific since the brain is diffusely involved.
- No ischemic lesions are detected.

What would you do next?

- A) Treat the patient for Alzheimer's disease.
- B) Order a brain SPECT.
- C) Order a EEG.
- D) Repeat exams in 6 months.

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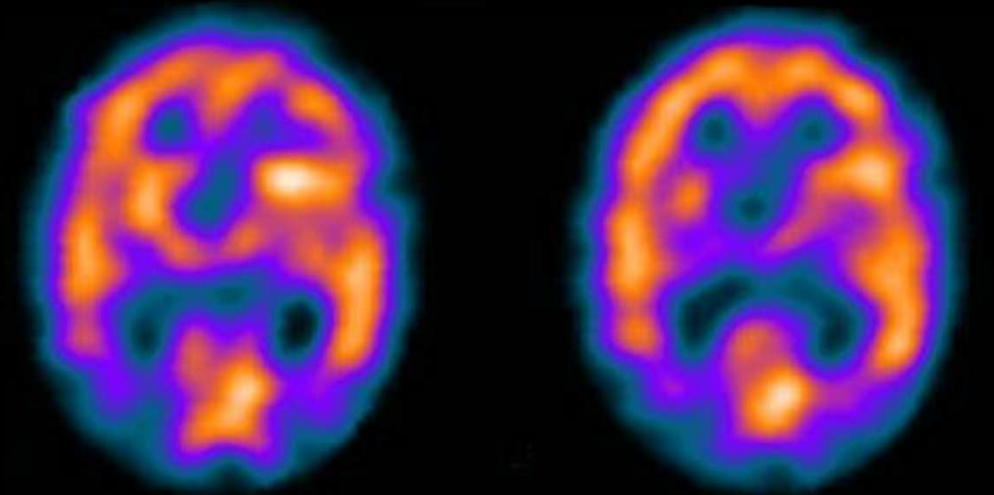
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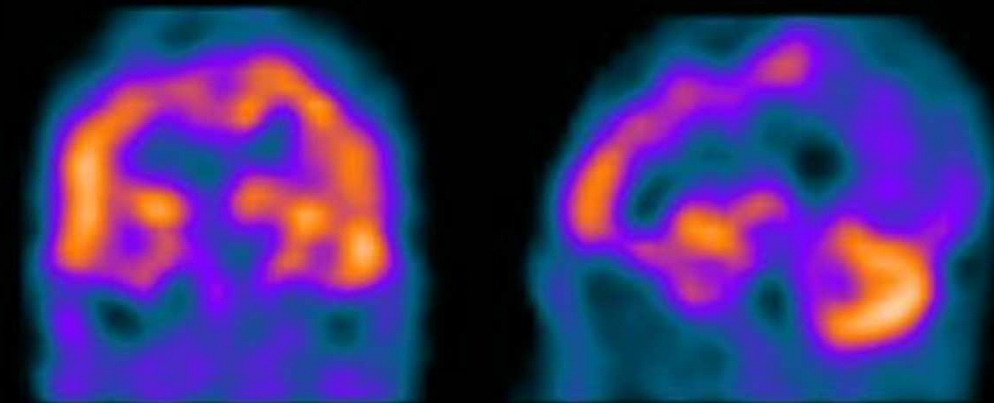
- The diagnosis is still not confirmed at this point.
- Brain perfusion SPECT can demonstrate changes typical of Alzheimer's.
- Treatment can delay progression of the disease in the early phase.
- Although of some value, EEG usually does not help much in diagnosis.

SPECT study

^{99m}Tc – ECD
925 MBq (25 mCi)



Transverse



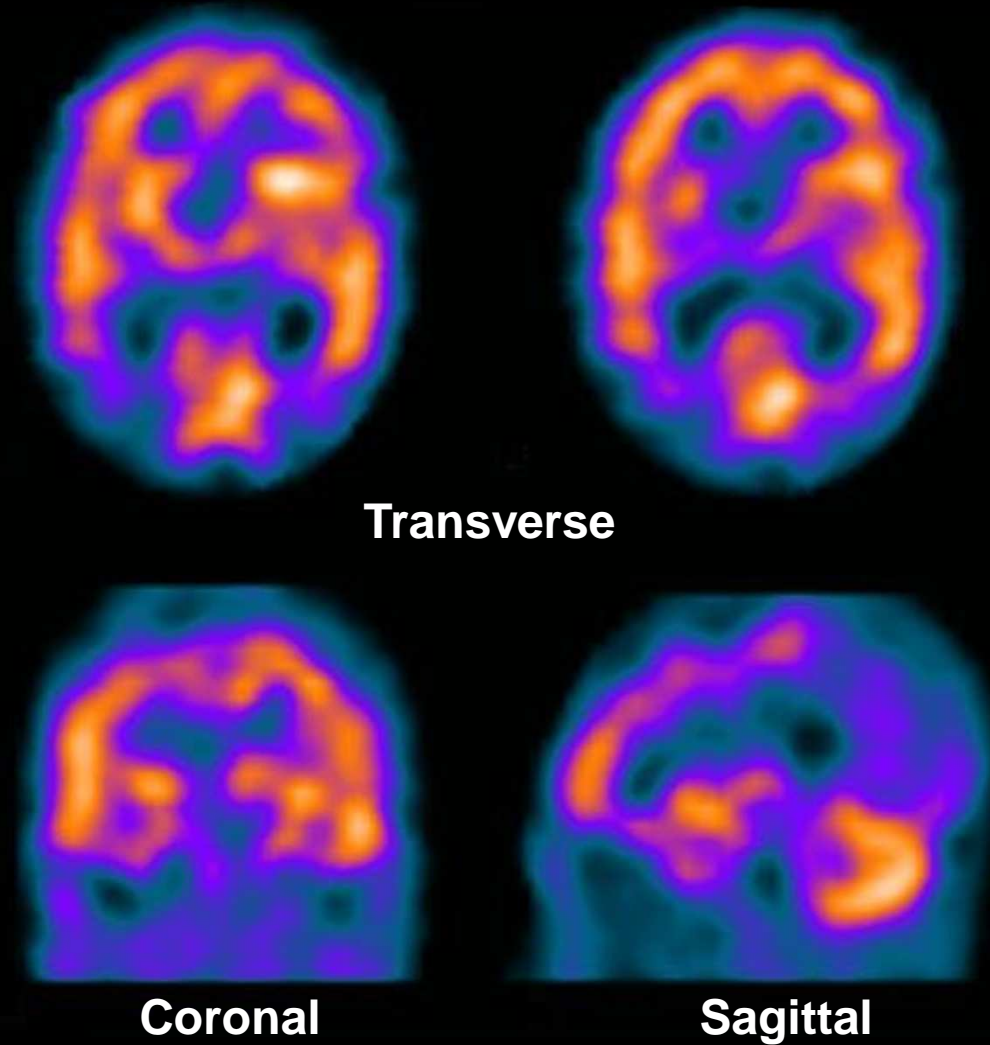
Coronal

Sagittal

SPECT study

Findings consistent with:

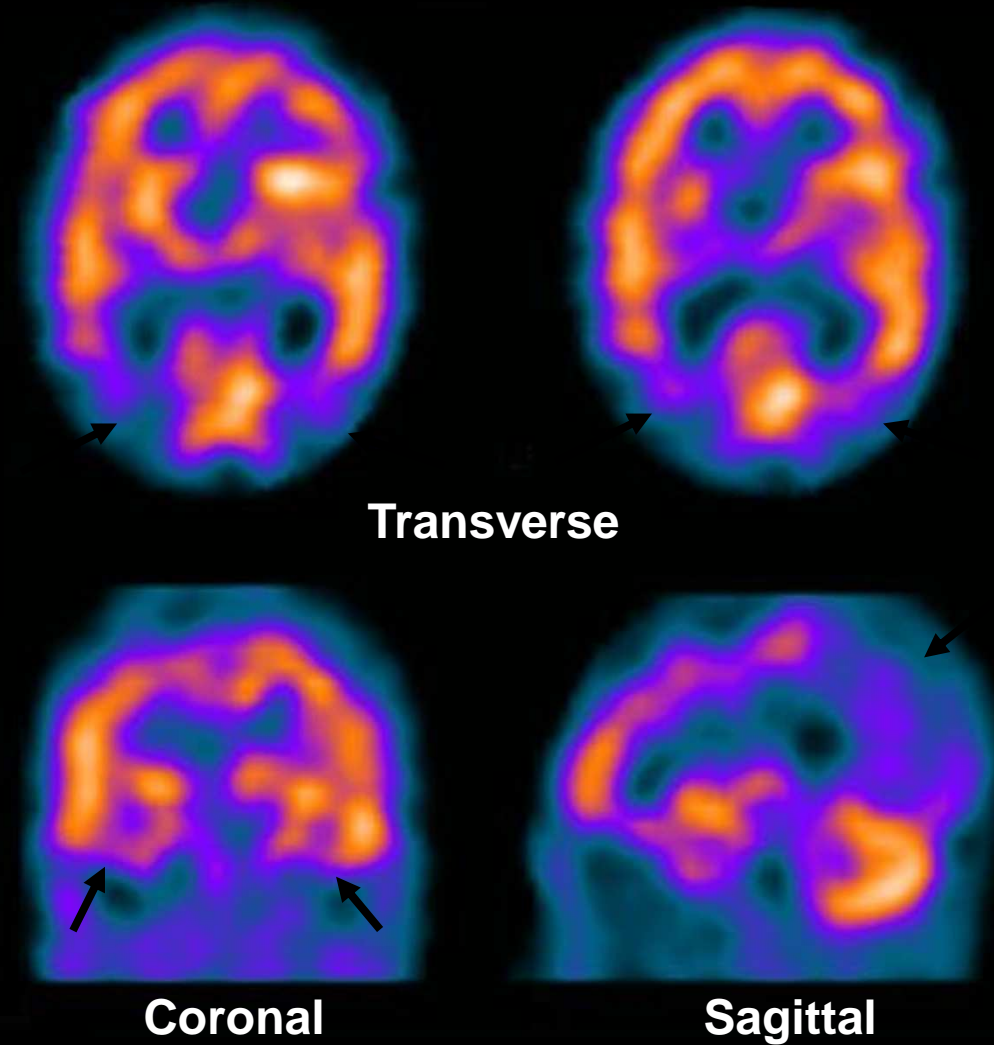
- A) Frontal lobe dementia.
- B) Alzheimer's dementia.
- C) Lewy body dementia.
- D) Normal aging.



SPECT study

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- A) Frontal lobe dementia.
- **B) Alzheimer's dementia.**
- C) Lewy body dementia.
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- Bilateral, temporo-parietal perfusion defects

Teaching points:

- Alzheimer's disease is the most common form of dementia.
- It accounts for approximately 64% of all diagnosed dementias.
- The features of Alzheimer's disease include a gradual onset and continuing decline of memory, changes in judgment or reasoning, and loss of ability to perform familiar tasks.

Teaching points:

- Other common dementias include Vascular Dementia, Lewy body Dementia, Frontotemporal Dementia and (more rarely) Creutzfeldt-Jakob Disease.
- Clinical diagnosis is of probability only, and there is often overlapping of signs and symptoms making difficult to differentiate between types of dementia, especially during the initial phase of the disease.
- Even depression can mimic certain types of dementia in the elderly

Teaching points:

- Each type of dementia has distinct imaging patterns in brain SPECT.
- The typical SPECT appearance of Alzheimer's disease is decreased uptake in the temporo-parietal regions, either symmetric or asymmetric (B).
- In very early stages, only medial temporal regions are typically affected (A).
- In a late phase, frontal regions can also be involved (C).
- Sensorial-motor areas, visual cortex, and basal ganglia are rarely involved.

