AMYLOID and TAU

Understanding the Two Key Proteins in Alzheimer's Disease (AD)

Amyloid- β (A β)

Sticky protein fragments that clump into plaques outside neurons

Tau Protein

Protein that stabilizes microtubules, but forms tangles **inside neurons** when abnormal

Amyloid appears first

May accumulate 10-20 years before symptoms

Combined effects of amyloid & tau lead to the damage and loss of brain cells

Amyloid buildup

Tau tangle formation

Neurodegeneration and cognitive decline

Tau appears later aligning with symptom onset and severity

Detection:

Cognitive tests and MRI

Amyloid PET scan, plasma p-tau 217, CSF Aβ42 levels



Tau PET scan, blood/CSF p-Tau181/p-Tau217

Clinical Use:

Cognitive tests correlate with MRI atrophy

Early detection of Alzheimer's pathology



Strong correlation with disease severity

Availability:

Both are widely, although not uniformly, available

Widely used in research; moving into clinics



Emerging blood tests are making it more accessible

Treatment Focus:

AChE inhibitors aid cognition; MRI tracks disease and therapy response

Amyloid targeting drugs are focused on plaque removal



Tau targeting therapies are still in development

Key Takeaways:

- Amyloid initiates the disease process
- 2 Tau drives symptoms and progression
- 3 Both are crucial to understanding and treating AD

