

# PATHOLOGY LAB

Doc Manar's material

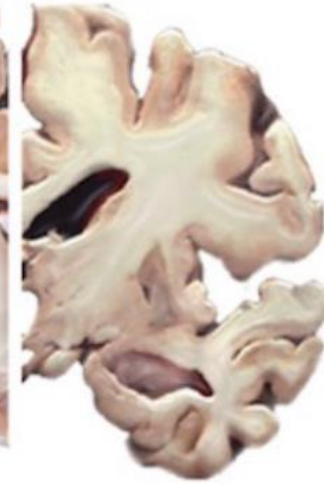
Modified by kotkot



Healthy  
Brain



Severe  
Alzheimer's

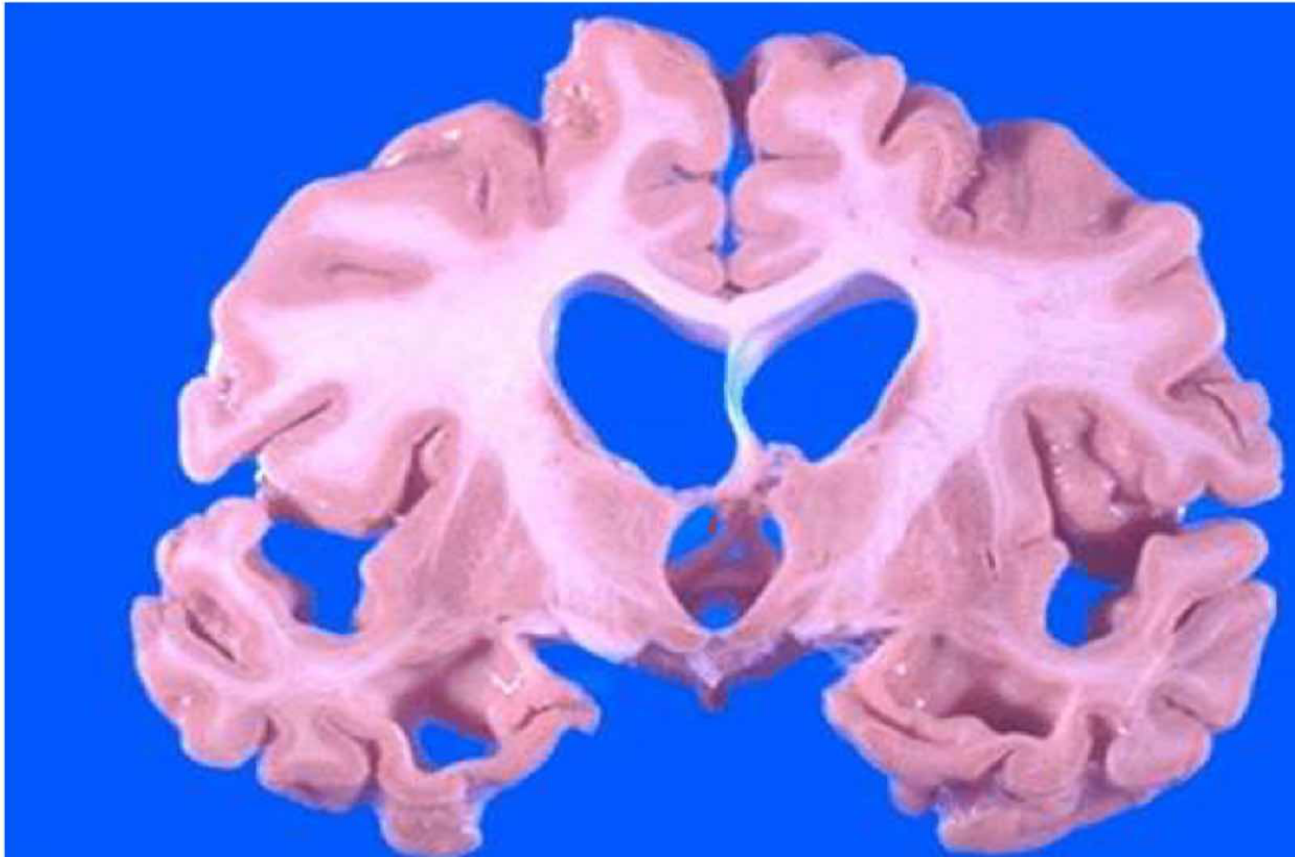


Neuronal cell loss leading to extensive shrinkage in an Alzheimer's brain (right), as compared to a healthy human brain (left).

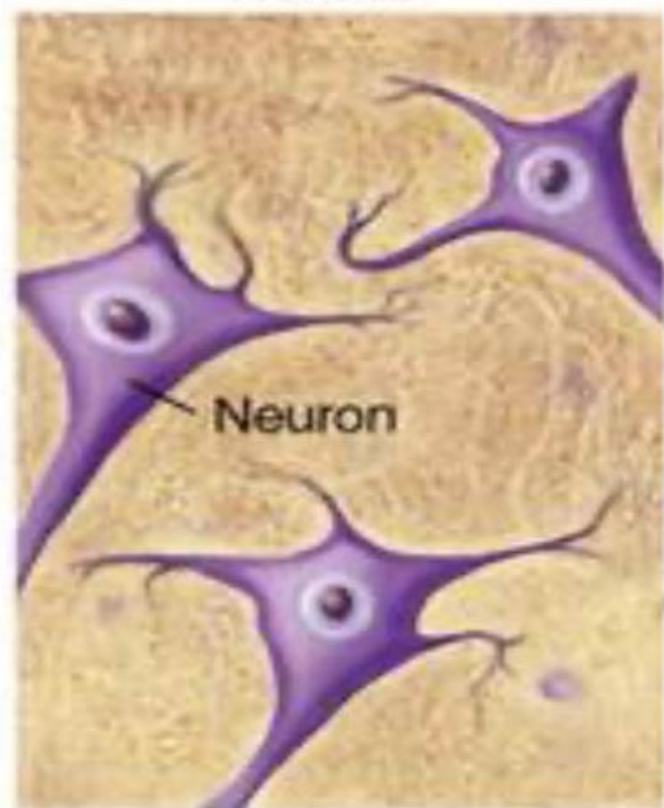


- ▶ Mainly in the frontal and parietal regions, characterized by **narrowed gyri** along with **widened sulci**.

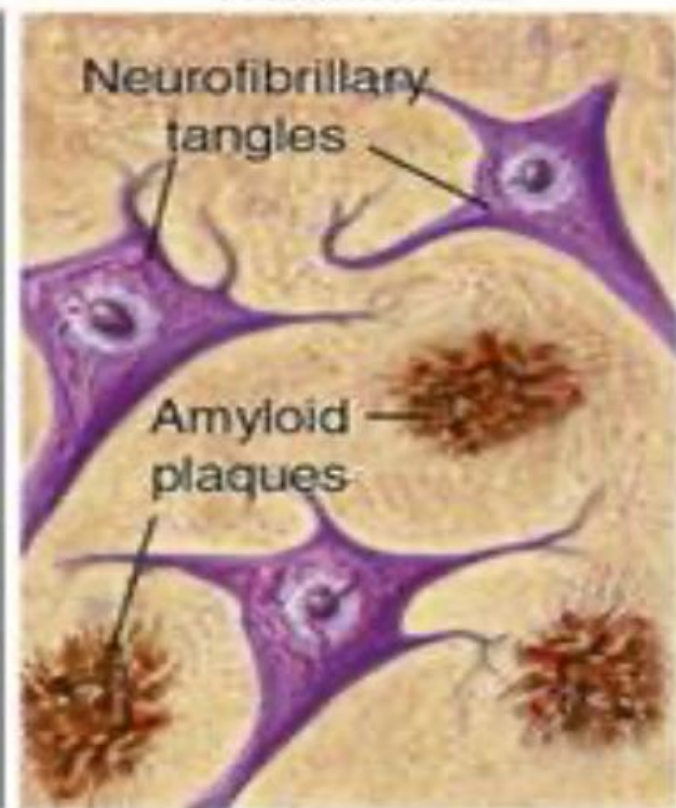
Progressive cortical atrophy with Alzheimer disease leads to compensatory dilation of the **cerebral ventricles** known as "hydrocephalus ex vacuo".



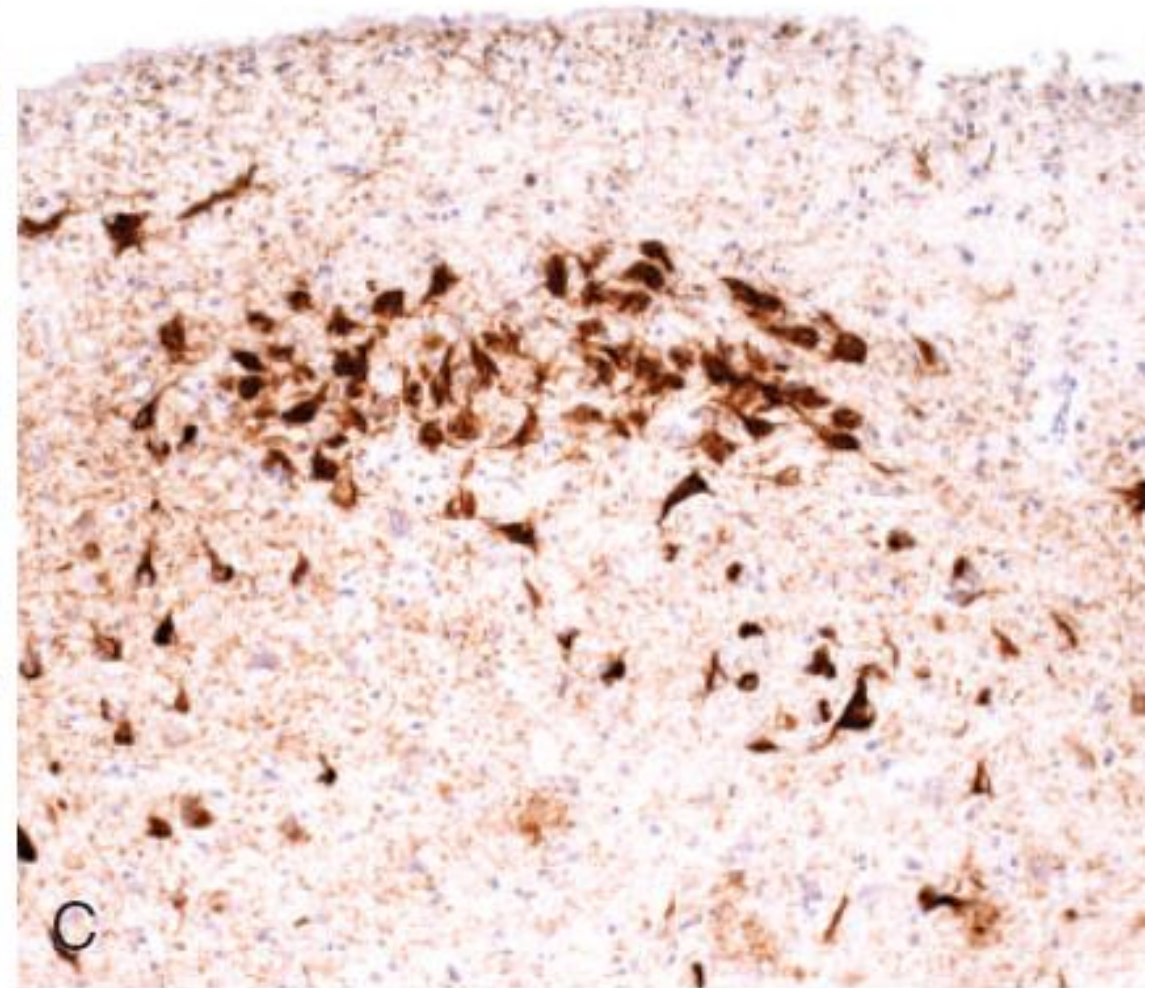
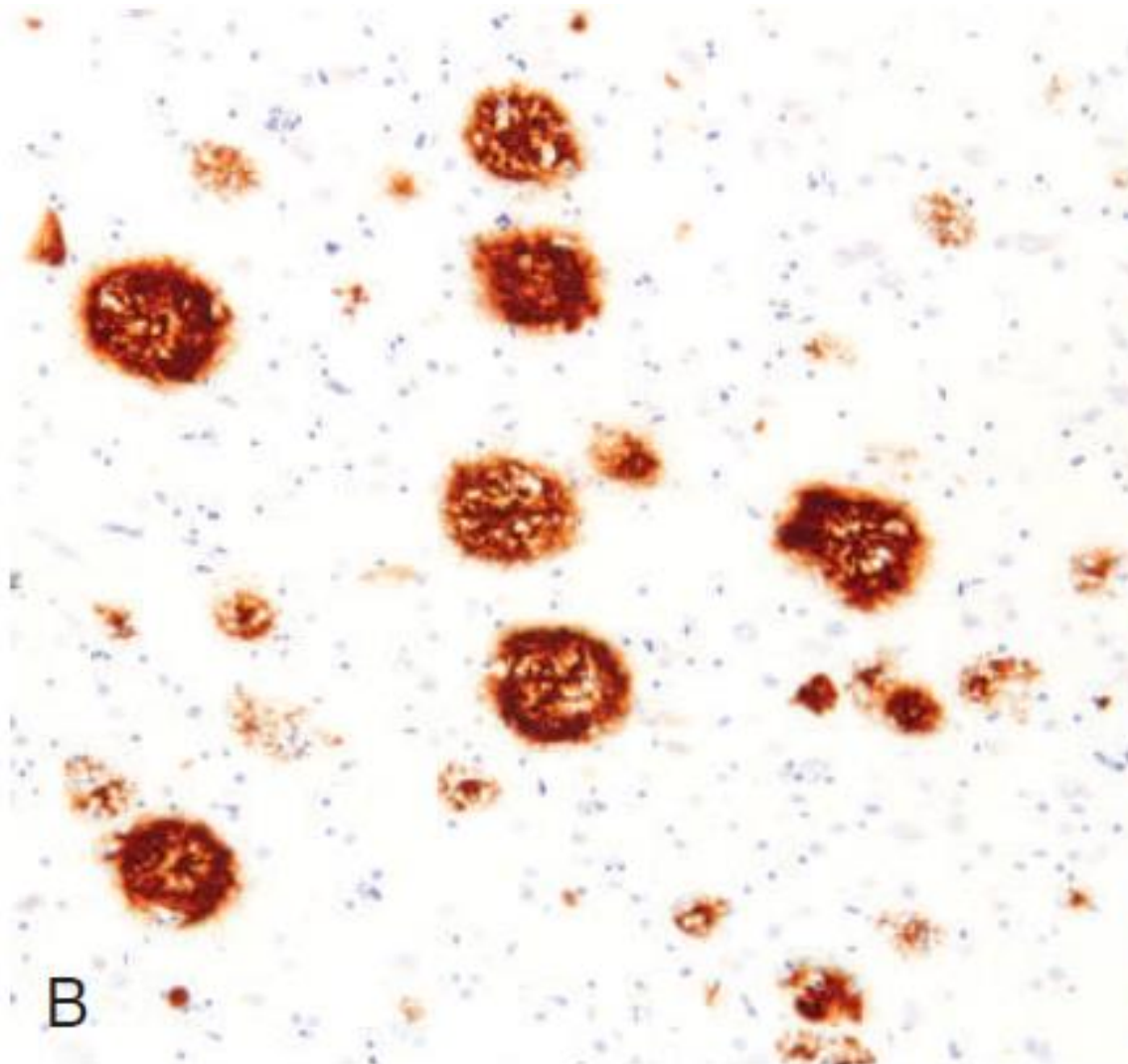
Normal

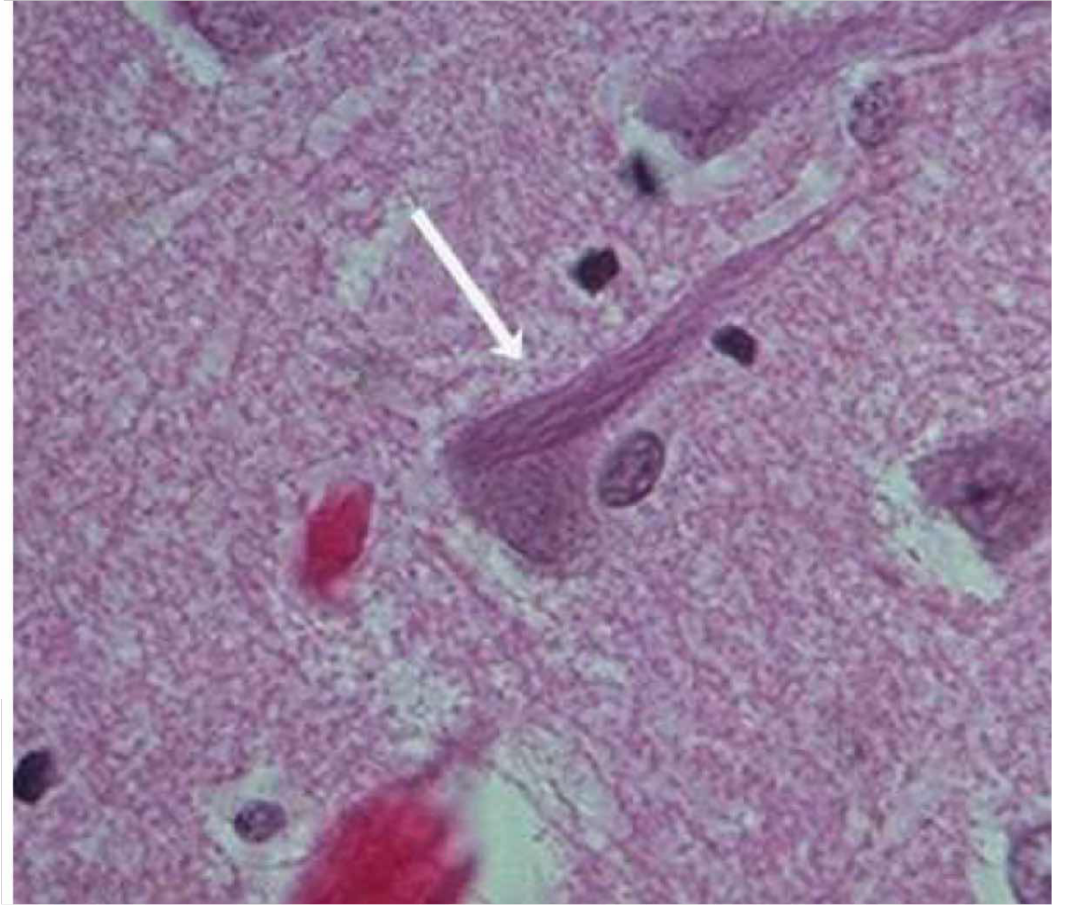
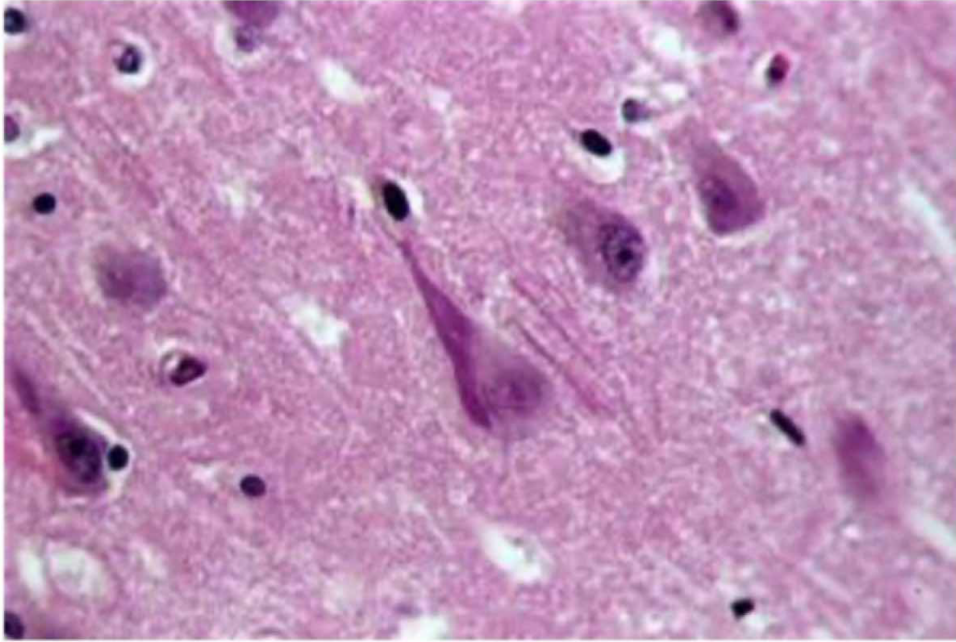


Alzheimer's

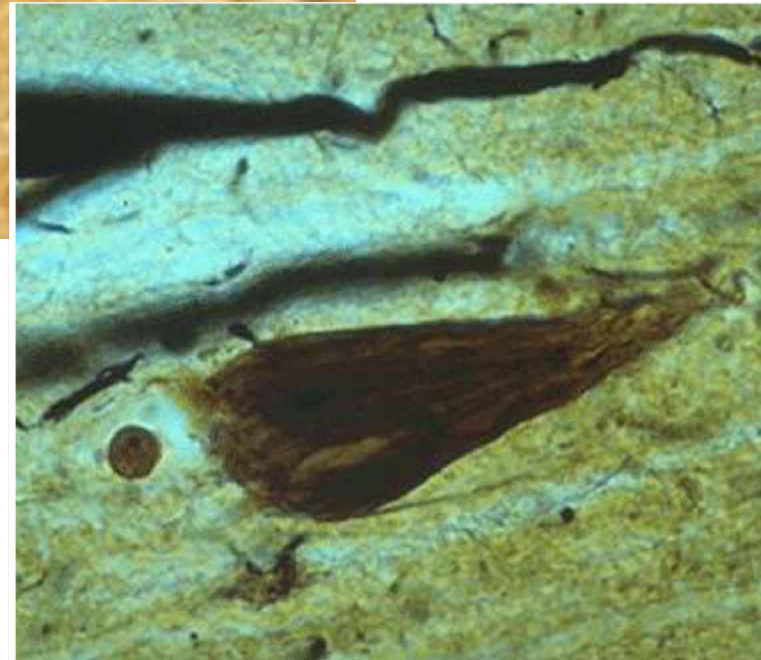
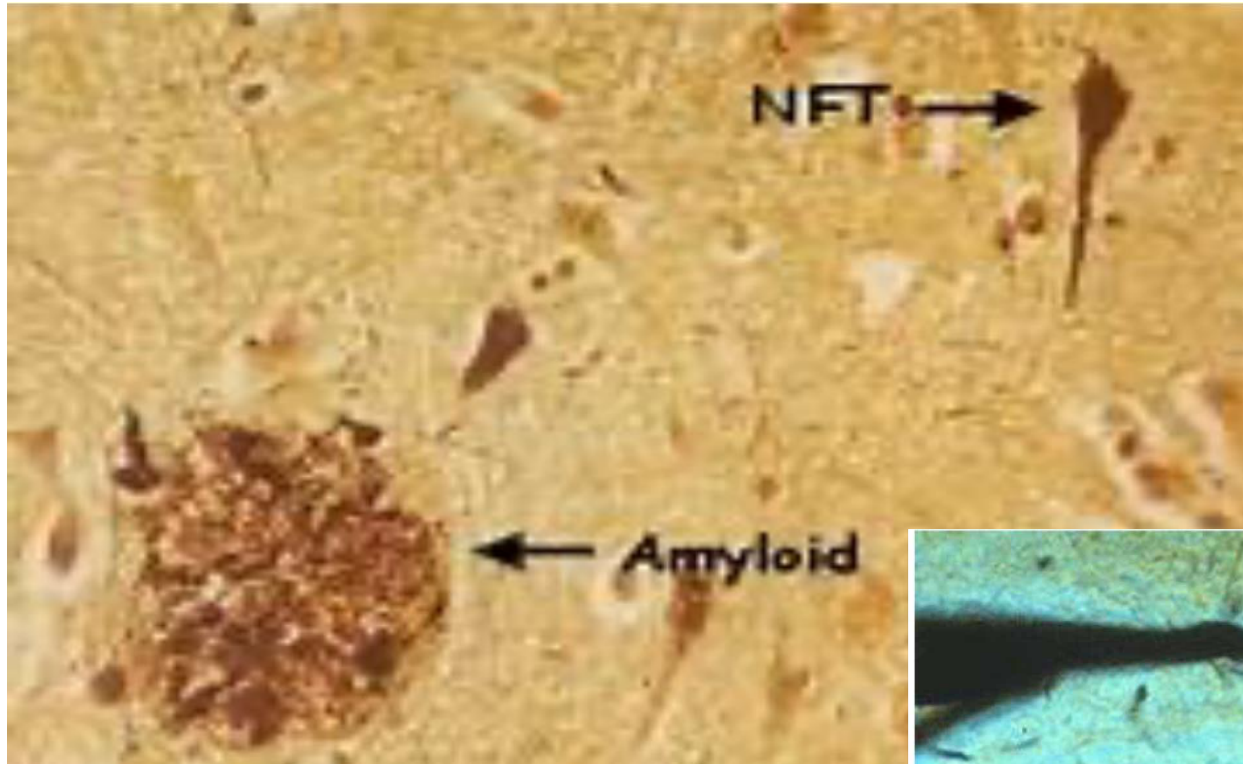


# Plaques and tangles AD



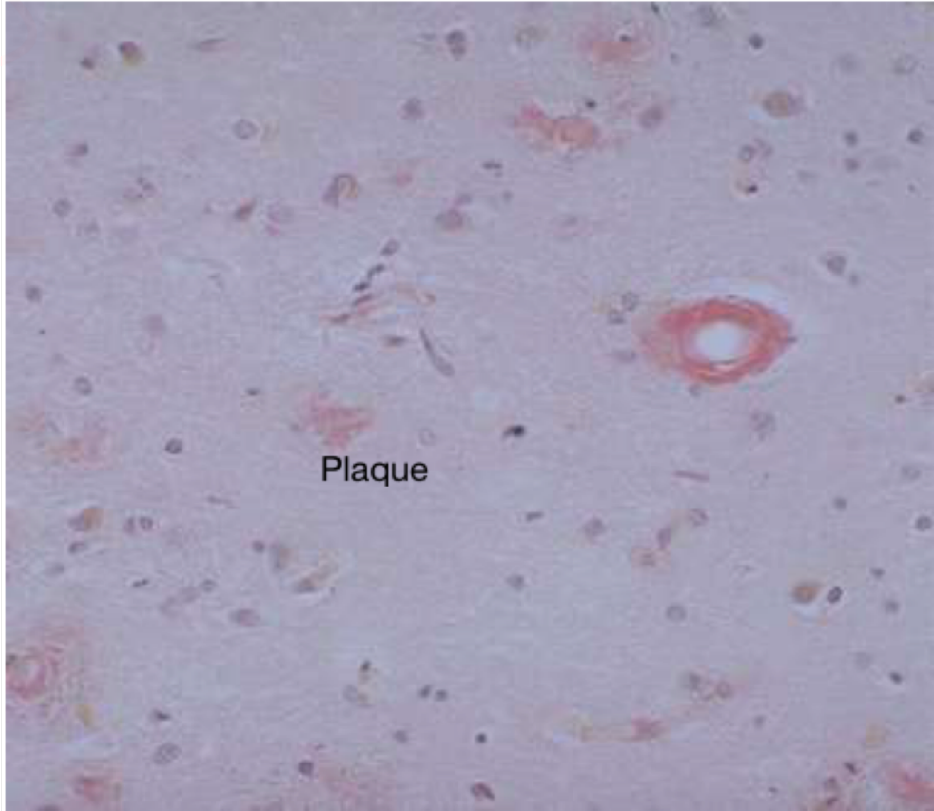


NEUROFIBRILLARY TANGLES (AD)



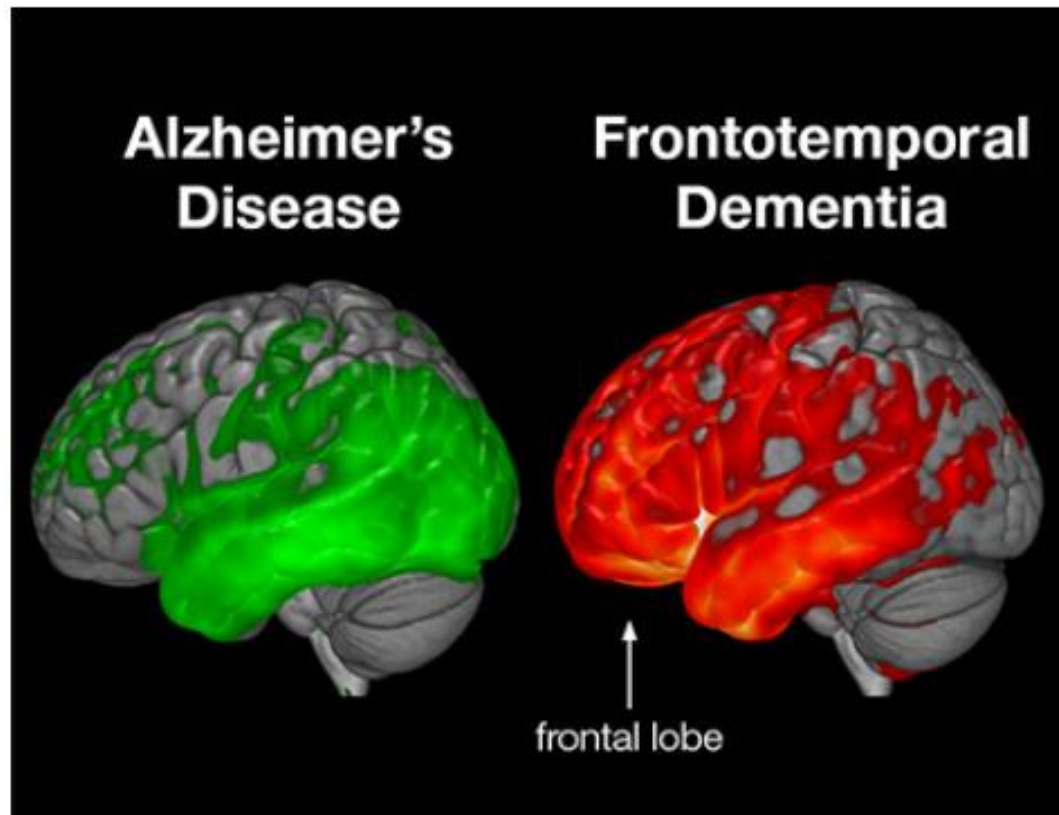
Silver stain for  
NFT





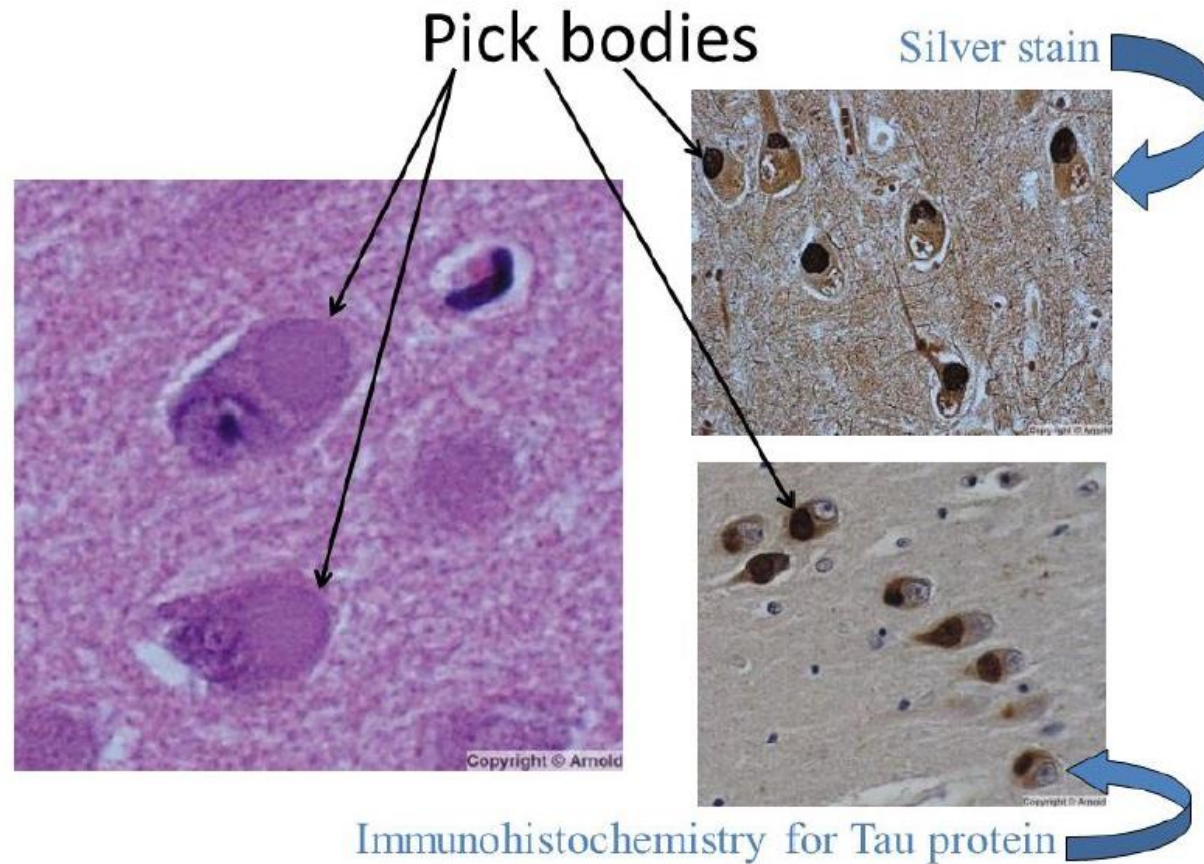
Congo red  
stain for  
amyloid core  
of plaques.

**The amyloid core contains AB**



- In AD there is sparing of the frontal lobe, at least at the beginning so behavioural changes are a late manifestation.
- In FTL D frontal is affected from the beginning so patients present with behavioural problems first.

Neuronal inclusion contains Tau  
smooth round inclusion





Normal  
substantia  
nigra



Depigmented  
substantia nigra in  
idiopathic  
Parkinson disease



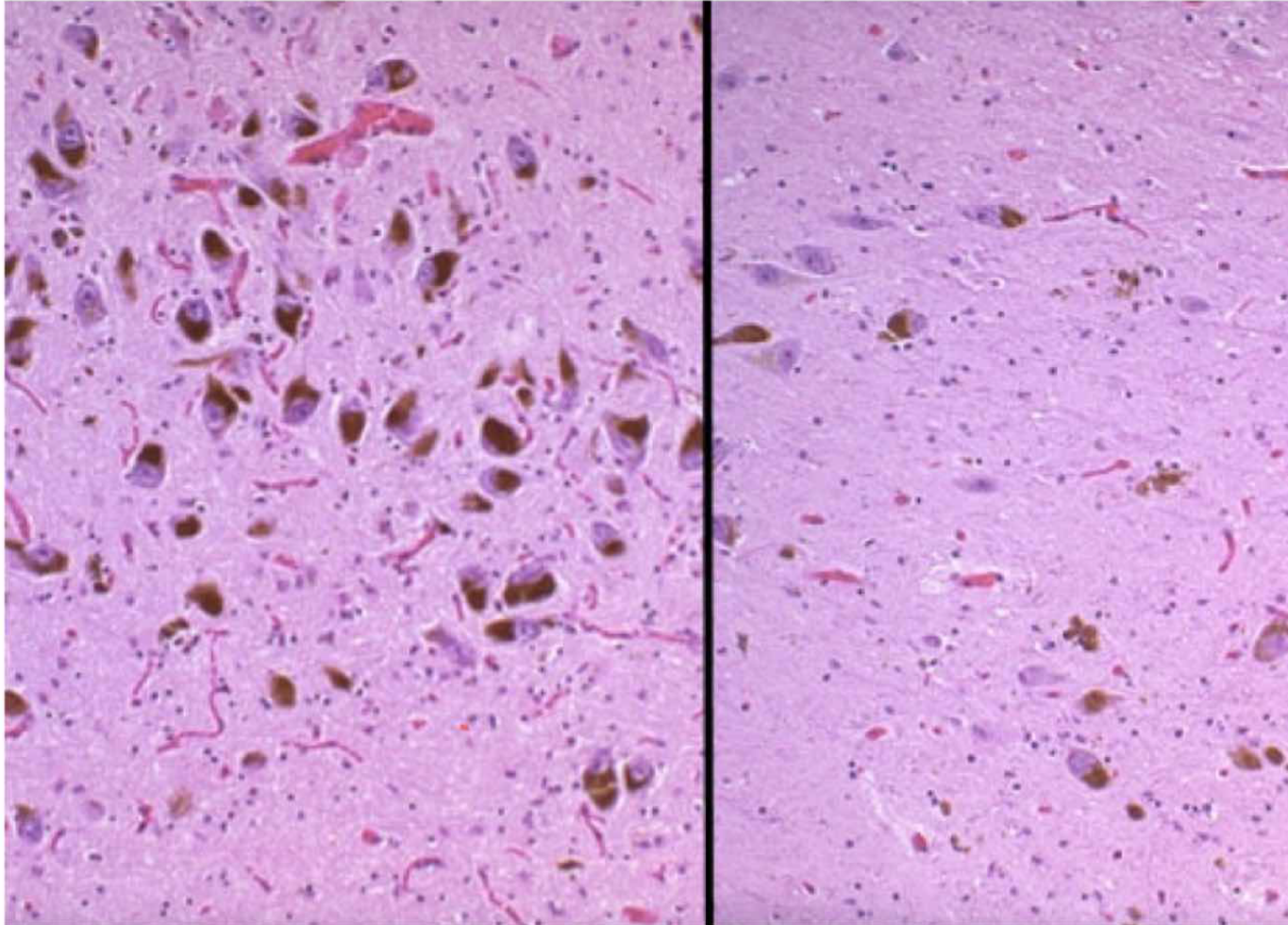
Peripheral Nucleus

Lewy

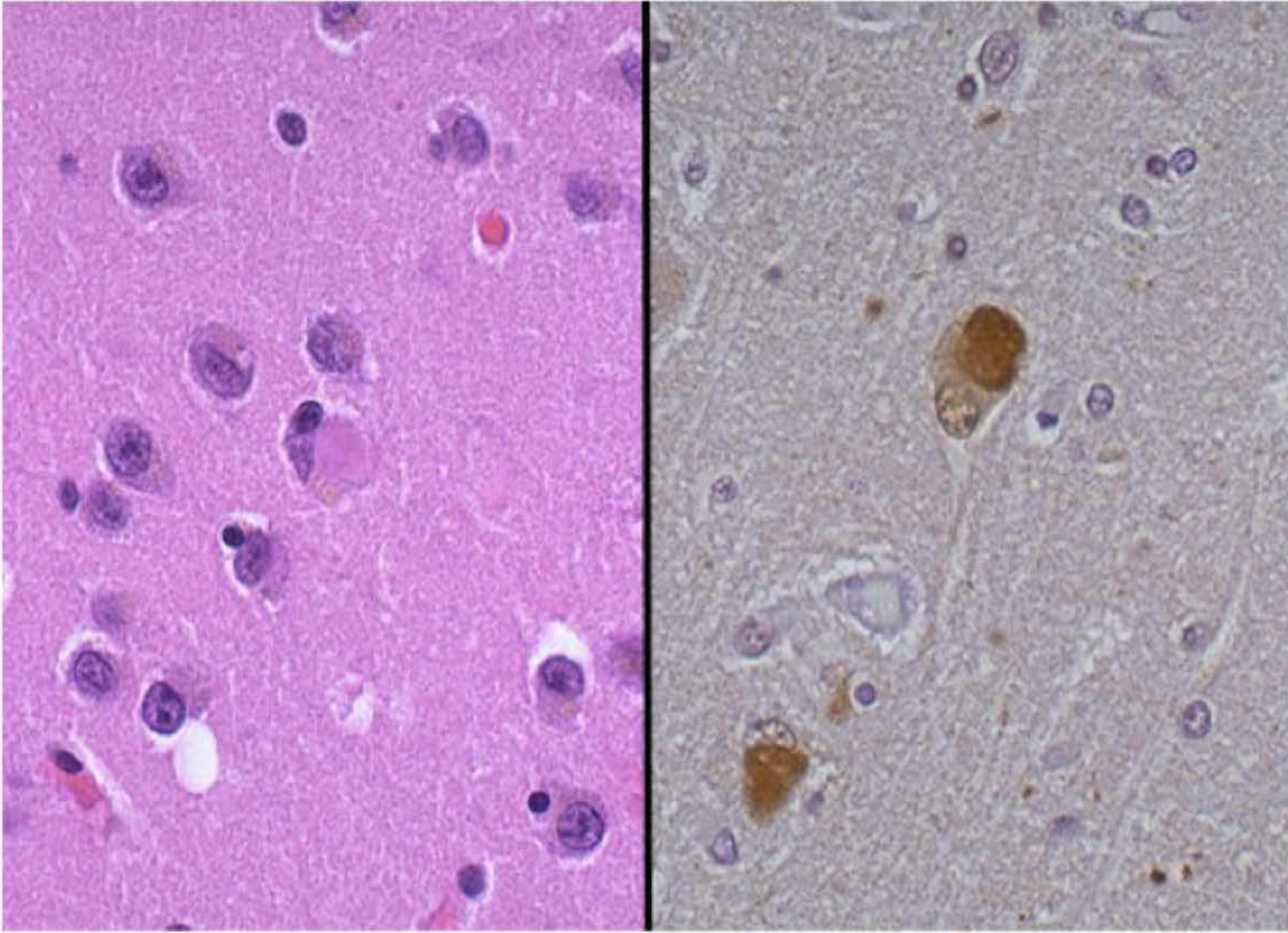
~~pink~~ body in a neuron from the substantia nigra stains pink.

Contains  $\alpha$ -synuclein

Nissel substance + Neuron



- ▶ Left: normal
- ▶ Right: loss of pigmented neurons in SN.



- ▶ Immunostaining for ubiquitin to highlight Lewy bodies.



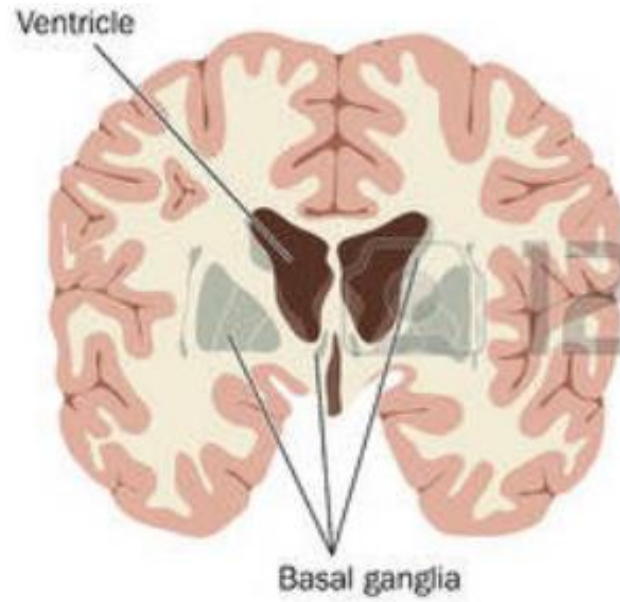
- ▶ **Impaired posture and balance.** stooped posture (leaning forward), and balance problems



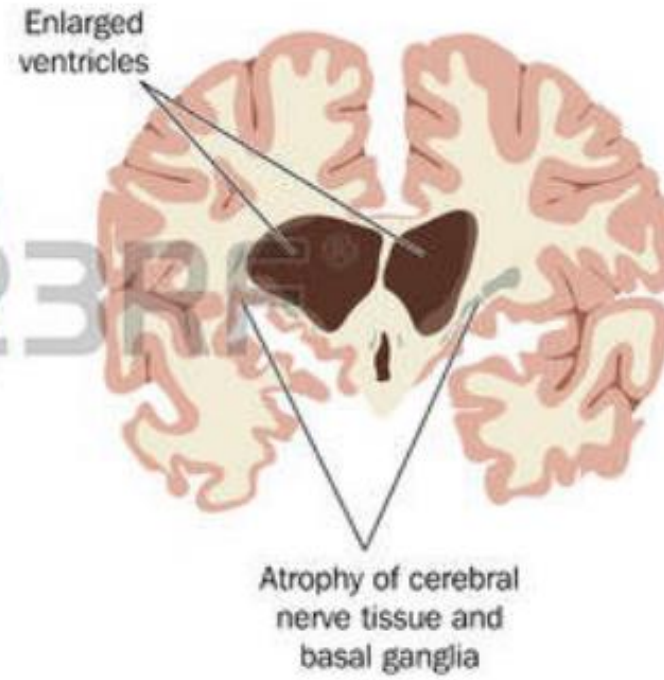
Stooped posture

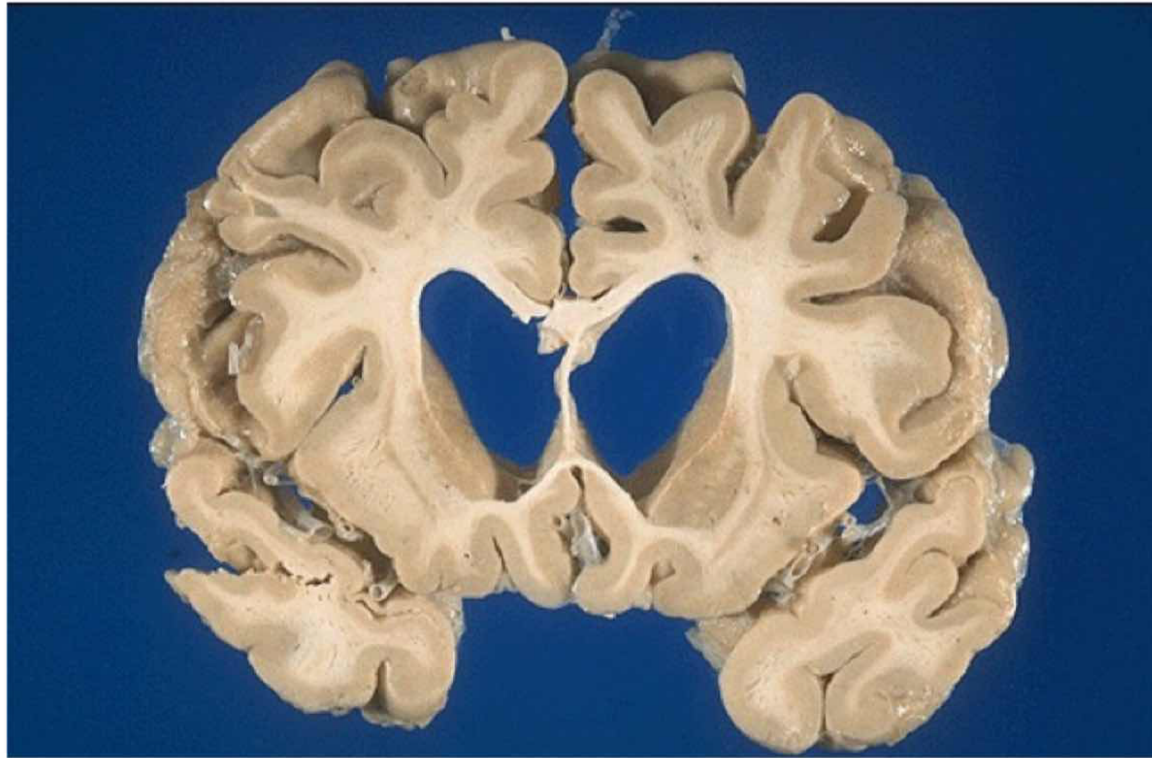
Parkinson disease

**Normal brain**



**Huntington's disease**

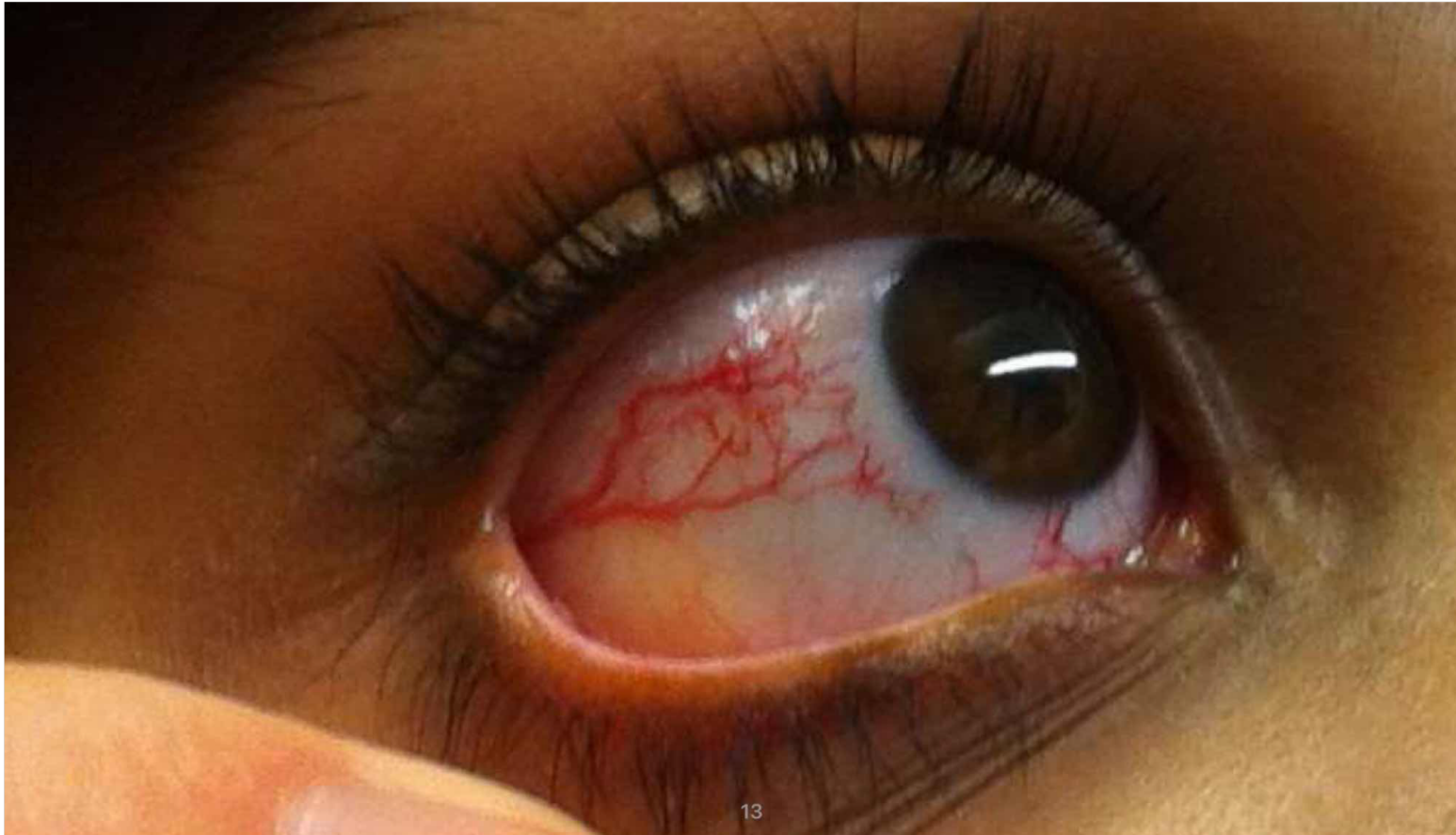




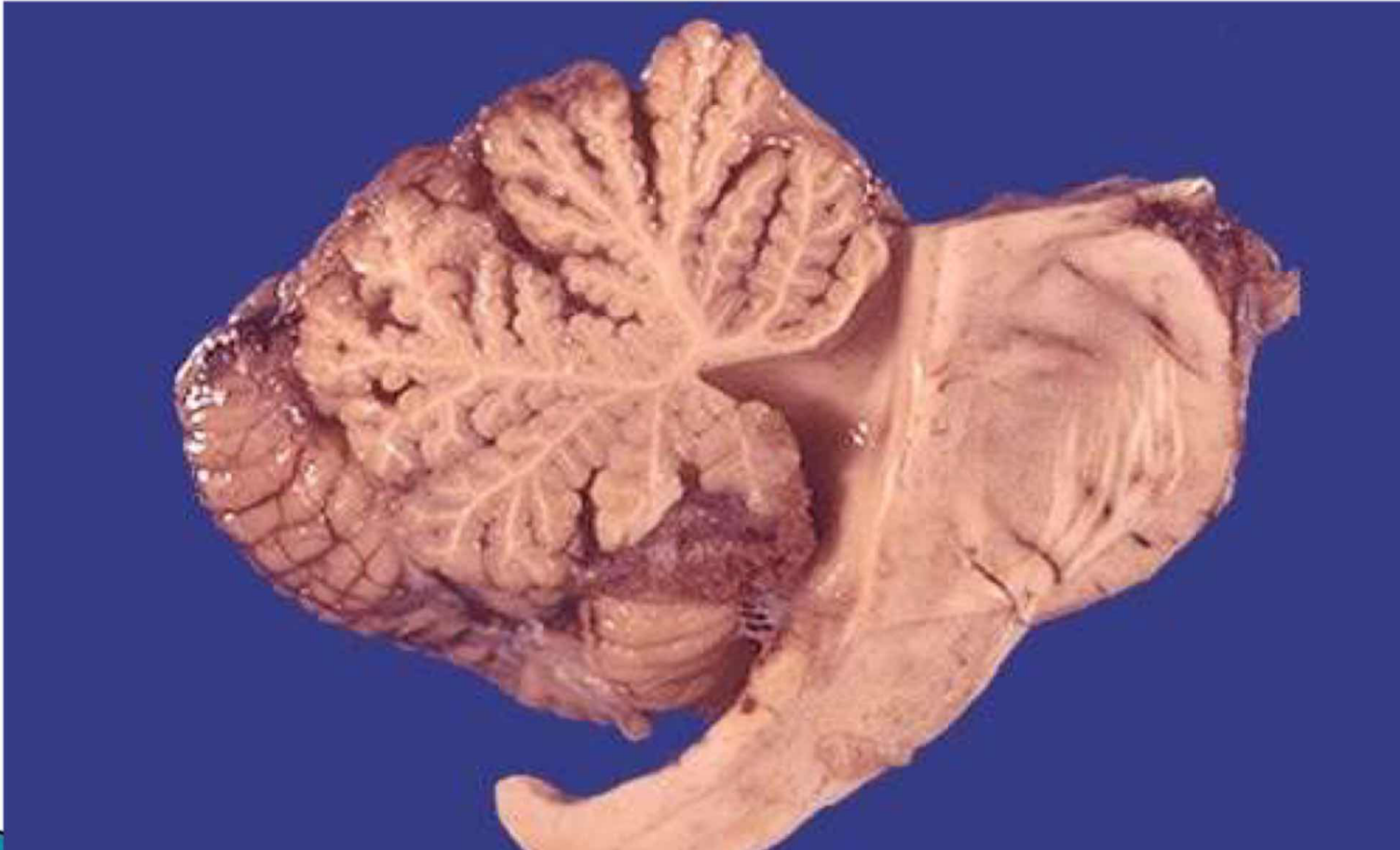
- ▶ Enlargement of the ventricles seen here is due to **atrophy** of the head of the caudate.

Huntington disease

Occulocutaneous telangectasia  
seen in Ataxia Telangectasia



# Cerebellar atrophy



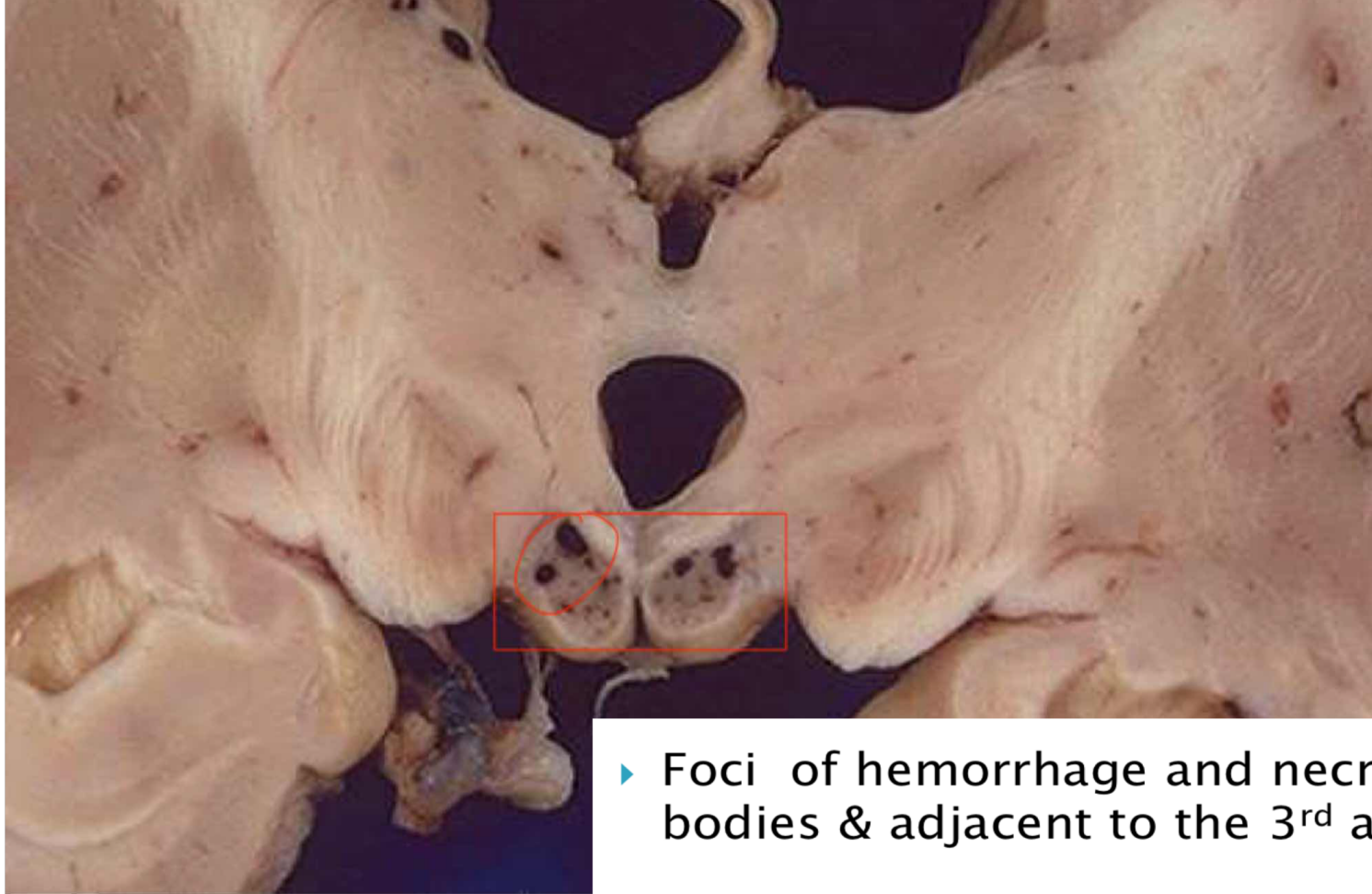
Seen in ataxia  
telangiectasia



# ALS

- ▶ Loss of anterior horn cells >> (ventral) spinal motor nerve roots demonstrate **atrophy**, as seen here in comparison with **normal** ventral spinal cord nerve roots.

## Thiamine Deiciency



- ▶ Foci of hemorrhage and necrosis (mammillary bodies & adjacent to the 3<sup>rd</sup> and 4<sup>th</sup> ventricles).
- ▶ later, cystic space with hemosiderin-laden macrophages.

قال تعالى: قَالَ قَدْ أُوتِيتَ سُؤْلَكَ يَا مُوسَى ❤️