

Parkinson Disease

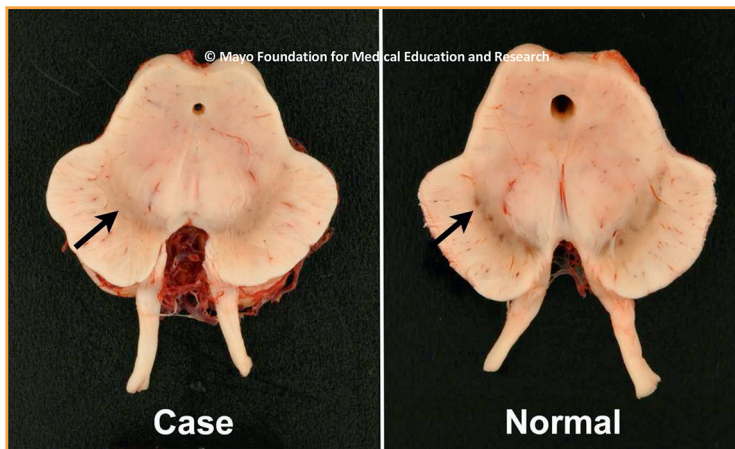


Rachael A. Vaubel, MD, PhD; Aditya Raghunathan, MD; and Lori A. Erickson, MD

This cross-section of midbrain from an older man with a neurodegenerative disease exhibits marked pallor of the substantia nigra (arrow) compared with a normal brain.

From the Department of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN.

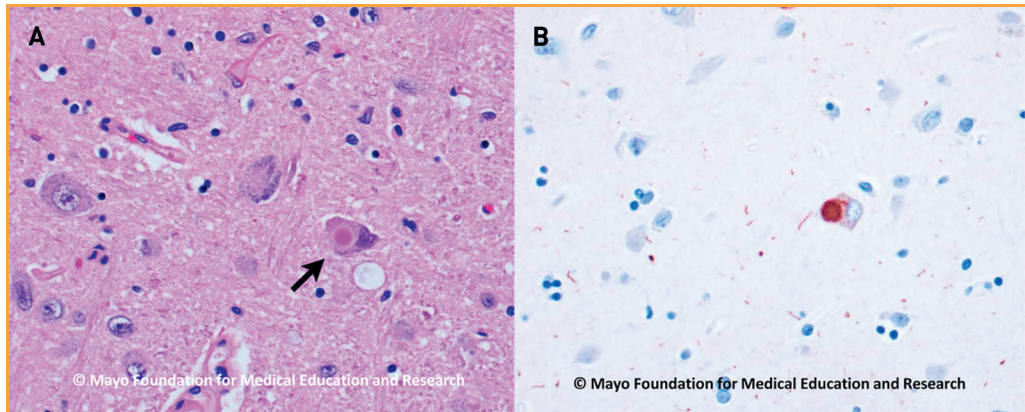
What is the most likely diagnosis and protein abnormality?



- a. Parkinson disease, α -synuclein
- b. Alzheimer disease, β -amyloid
- c. Frontotemporal dementia, tau
- d. Amyotrophic lateral sclerosis, TDP-43 (TAR DNA-binding protein 43)

(see page e156 for answer)

Answer: a. Parkinson disease, α -synuclein



Parkinson disease is characterized by bradykinesia, rigidity, stooped shuffling gait, and often resting tremor as well as nonmotor features such as anxiety, depression, and sleep disorders, among others.¹ The midbrain may exhibit pallor of the substantia nigra. Microscopic neuronal inclusions called Lewy bodies, a complex accumulation of proteins including α -synuclein, play a key role in the pathogenesis.² On hematoxylin and eosin stain (A), Lewy bodies appear as neuronal intracytoplasmic inclusions that are roughly spherical, eosinophilic, and surrounded by a pale “halo” (arrow). Lewy bodies are highlighted by the immunohistochemical stain for α -synuclein (B).

REFERENCES

1. Ahlskog JE. Parkinson disease treatment in hospitals and nursing facilities: avoiding pitfalls. *Mayo Clin Proc.* 2014;89(7):997-1003.
2. Dehay B, Bourdenx M, Gorry P, et al. Targeting α -synuclein for treatment of Parkinson's disease: mechanistic and therapeutic considerations. *Lancet Neurol.* 2015;14(8):855-866.