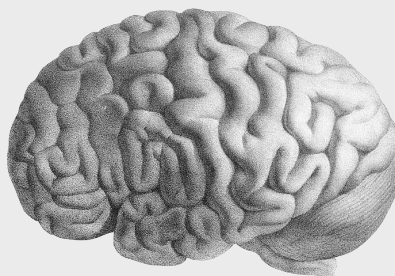


Hallmark Characteristics of Neurodegenerative Disorders



Marc W. Fariss, Ph.D.

2/3/2025

Overall Conclusions:

Though the initial insults that cause BPAN, Parkinson's and Alzheimer's disorders may be different, the cascade of toxic events that follow and result in neurodegeneration appears to be identical [common pathway to neurodegeneration].

Disorder Characteristics	BPAN	Parkinson's	Alzheimer's
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Differences:

1. Known Initial Insult [cause]	Yes [genetic]	No	No
2. Onset Age [yrs]	1+	60+	60+

Similarities:

1. Brain Location	Substantia Nigra /Cerebrum	Substantia Nigra /Cerebrum	Cerebrum
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Disorder Characteristics	BPAN	Parkinson's	Alzheimer's
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Similarities:

2. Sequence of Pathological Events in the Brain

a. Endoplasmic Reticulum [ER] oxidative damage [↑cell debris, ↓protein & lipid synthesis].	Yes	Yes	Yes
b. Mitochondrial oxidative damage [↓energy production, ↑cell debris].	Yes	Yes	Yes
c. Autophagy dysfunction [↓removal of cell debris].	Yes	Yes	Yes
d. Iron accumulation [inside and outside brain cells].	Yes	Yes	Yes
e. Tangles of protein and lipid [inside and outside brain cells].	Yes	Yes	Yes
f. Neuronal cell injury & death [↓in cognitive ability, language & motor skills].	Yes	Yes	Yes
g. Oligodendrocyte injury & death [↑demyelination].	Yes	Yes	Yes
h. Microglial cells and astrocytes injury & death [↑brain inflammation].	Yes	Yes	Yes
i. Neurodegeneration accelerates.	Yes	Yes	Yes