

Chapter 16

Neuropathology of Parkinsonism in Alzheimer's Disease

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About 30 % of Alzheimer's disease (AD) patients develop parkinsonian features, but Lewy body pathology is not always present at autopsy. So the neuropathological substrate of extrapyramidal signs in AD remains unclear. In the present study neuronal and neurofibrillary tangle (NFT) densities were counted in the substantia nigra pars compacta (SN) and in the putamen of 22 AD patients, 11 with and 11 without parkinsonism. Parkinsonism was defined as the presence of bradykinesia and at least one of resting tremor, rigidity, or gait disorders. Our results showed that parkinsonism in AD is related to a significant neuronal loss both in the SN and in the putamen, suggesting pre- and postsynaptic alterations of the nigrostriatal pathway.

In contrast, neuronal tau deposition was a less important factor. Only densities of NFTs in the SN correlated with parkinsonism but not in the putamen. We propose that a subgroup of pure AD patients develop parkinsonian symptoms as a result of neuronal loss in the basal ganglia, indicating a prominent subcortical involvement, which appears unrelated to the neuropathological severity of AD.

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