



Increased synphilin-1 expression in human elderly brains with substantia nigra Marinesco bodies

Anna Krygowska-Wajs¹, Tomasz Lenda⁵, Dariusz Adamek², Marek Moskała³, Katarzyna Kuter⁵, Jerzy Kunz⁴, Maria Śmiałowska⁶, Krystyna Ossowska⁵

¹Department of Neurology, ²Department of Neuropathology, ³Department of Neurosurgery, Collegium Medicum, Jagiellonian University, Botaniczna 3, PL 31-503 Kraków, Poland

⁴Department of Forensic Medicine, Collegium Medicum, Jagiellonian University, Grzegórzecka 16, PL 31-531 Kraków, Poland

⁵Department of Neuro-Psychopharmacology, ⁶Department of Neurobiology, Institute of Pharmacology, Polish Academy of Sciences, Smętna 12, PL 31-343 Kraków, Poland

Correspondence: Krystyna Ossowska, e-mail: ossowska@if-pan.krakow.pl

Abstract:

The aim of the present study was to examine the expression of synphilin-1, α -synuclein, and tyrosine hydroxylase in human elderly brains and the incidence of Marinesco bodies (MBs, intranuclear inclusions) in the neuromelanin-containing substantia nigra neurons. The brains of twenty-two individuals without clinical signs and symptoms of parkinsonism and dementia and an additional two parkinsonian patients were dissected and subjected to histopathological examination and western blotting. Ubiquitin-positive and α -synuclein-negative MBs were found in 0.84–9.45% of the nigral neurons from brains of 15 healthy individuals and both parkinsonian patients. The frequency of pigmented nigral neurons containing MBs was positively correlated with age. The levels of tyrosine hydroxylase in the caudate nucleus and putamen decreased with age, and were inversely correlated with the MB frequency. The level of synphilin-1 in the caudate nucleus was positively correlated both with age and the MBs. Additionally, the MB appearance was correlated with synphilin-1 level in the substantia nigra. No significant correlation between α -synuclein expression and age or MBs was found.

Our results suggest that synphilin-1 expression increases with aging. Further studies on expression of this protein in elderly brains are warranted.

Key words:

aging, Marinesco bodies, tyrosine hydroxylase, synphilin-1, α -synuclein, substantia nigra, striatum, western blot
