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Clinical Neuropathology image 5-2014: α -synuclein pathology in the ependyma in Parkinson's disease

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Key words

α -synuclein –
Parkinson's disease –
Lewy-related pathology
– cerebrospinal fluid
– ependyma

α -synuclein pathology presenting as tiny dots, thin neurites, and larger amorphous deposits in the subependymal area, as well as tiny dots between ependymal cells in the brains of individuals with neuropathologically proven Parkinson's disease (Braak stages 5 and 6). Immunostaining was performed using antibody 5G4 (Roboscreen, Leipzig, Germany; we applied 1 : 2,000 dilution and a pretreatment of 10 minutes microwaving in citrate buffer, pH 6, followed by 5 minute 80% formic acid treatment). We recently reported that this antibody has strong selectivity for β -sheet rich α -synuclein oligomers and that the ependymal α -synuclein immunoreactivity correlates well with Braak stages of Lewy-related pathology [1]. The antibody is suitable for detecting α -synuclein pathology even in tissue fixed for a very long time in formalin [2]. We report here that 5G4 antibody is able to detect disease-associated α -synuclein in the cerebrospinal fluid of in-

dividuals with neuropathologically proven α -synuclein deposition in the brain [3].

References

- [1] Kovacs GG, Breydo L, Green R, Kis V, Puska G, Lorincz P, Perju-Dumbrava L, Giera R, Pirker W, Lutz M, Lachmann I, Budka H, Uversky VN, Molnár K, László L. Intracellular processing of disease-associated alpha-synuclein in the human brain suggests prion-like cell-to-cell spread. *Neurobiol Dis.* 2014; 69C: 76-92. DOI: 10.1016/j.nbd.2014.05.020. [PubMed](#)
- [2] Kovacs GG, Wagner U, Dumont B, Pikkarainen M, Osman AA, Streichenberger N, Leisser I, Verchere J, Baron T, Alafuzoff I, Budka H, Perret-Liaudet A, Lachmann I. An antibody with high reactivity for disease-associated alpha-synuclein reveals extensive brain pathology. *Acta Neuropathol.* 2012; 124: 37-50. [PubMed](#)
- [3] Unterberger U, Lachmann I, Voigtländer T, Pirker W, Berghoff AS, Flach K, Wagner U, Geneste A, Perret-Liaudet A, Kovacs GG. Detection of disease-associated a-synuclein in the cerebrospinal fluid: a feasibility study. *Clin Neuropath.* 2014; 33: 329-334.

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