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Advancing early diagnosis of parkinson's disease using non-motor biomarkers: A Polish clinical perspective

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Statement: Parkinson's Disease (PD) is traditionally diagnosed based on motor symptoms, often appearing after substantial neuronal loss. Early identification through non-motor biomarkers could enable timely intervention and slow disease progression. This study investigates the diagnostic value of olfactory dysfunction, REM sleep behavior disorder (RBD), and autonomic dysfunction as early biomarkers of PD. A longitudinal observational study was conducted at the Department of Neurology, Medical University of Warsaw, involving 120 participants: 60 early-stage PD patients and 60 age-matched controls. Clinical assessments included the Sniffin' Sticks olfactory test, polysomnography for RBD, and autonomic function tests (heart rate variability and blood pressure response to tilt). Neuroimaging (DaT-SPECT) was used to correlate clinical findings with dopaminergic deficits.

Results: Olfactory dysfunction was present in 85% of PD patients vs. 18% of controls ($p < 0.001$), while RBD was identified in 63% of PD patients and only 10% of controls. Autonomic testing revealed significantly reduced heart rate variability in PD patients ($p < 0.005$). Combined, these non-motor features predicted PD with a sensitivity of 91% and specificity of 86% when matched with DaT-SPECT confirmation.

Biography

Tomasz Wójcik is an associate professor of neurology at the Medical University of Warsaw and an expert in movement disorders, particularly Parkinson's disease. He received his MD and PhD in Clinical Neurosciences from the same institution. His research focuses on early diagnostic markers, neurodegenerative mechanisms, and non-invasive neuroimaging. Dr. Wójcik has authored over 50 scientific publications and serves on the advisory board of the Polish Neurology Association. He is passionate about improving early diagnostic approaches and developing community-level neuro-screening protocols.

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