A METHOD FOR IDENTIFYING SUBTYPES OF PARKINSON'S DISEASE BASED ON UPDRS MEASUREMENTS

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Parkinson's disease (PD) is a neurodegenerative disorder with a chronic progressive course afflicting more than one million people in North America. Given the lack of biomarkers, progression of the disease is typically monitored by clinical rating scales. The most widely used scale is the Unified Parkinson's Disease Rating Scale (UPDRS). This scale measures PD-related disability and impairment and comprises 44 items (Parts I - III) rated from 0 to 4 with higher values reflecting worsening of symptoms. Scores based on sums of items are often used to measure disease progression.

The clinical course of PD is characterized by significant heterogeneity and there are several studies in the medical literature that suggest the existence of PD subtypes that exhibit similarities in terms of their clinical course. In this paper we use item level UPDRS longitudinal data collected from Parkinson's clinical trials to identify patient subgroups with distinct clinical course. We develop a classification algorithm that separates patients into distinct subgroups. The method has the advantage that it can be easily presented with graphical apparatus. Application of our method reveals the existence of several PD subtypes with quite distinct clinical progression patterns.