Therapeutic management of complicated Parkinson's disease: clinical application of the Motor Fluctuation Indices

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Objective: To evaluate the usefulness of the Motor Fluctuation Indices to assess clinically relevant change in motor fluctuations in advanced Parkinson's disease (PD) patients after therapeutic interventions on the 12-hour Waking-day Motor Assessment (WDMA).
Background: With the advancing of PD, factors concerning the central and peripheral pharmacokinetics and pharmacodynamics of levodopa lead to a pulsatile stimulation of dopamine receptors eventually resulting in motor fluctuations. Clinical management of subjects with complicated Parkinson's disease then requires specific therapeutic interventions that cannot adequately be supplied by short-cut methods of investigation. Nevertheless, the 12h-monitoring through the WDMA has showed to be a useful and reliable tool for leading physicians' clinical conduct according to the individual motor status with the possibility to achieve a "precision Medicine" for each PD case.
Methods: Twenty-eight (N=28) patients with complicated PD were selected. All patients underwent a WDMA before and after modulation of dopaminergic therapy. Motor assessment was performed by using the Unified Parkinson's Disease Rating Scale (UPDRS). To quantify the difference in severity of daily motor fluctuations between the first and the second evaluation, the Worsening Index (WI), the Mean Fluctuation Index (MFI) and the Coefficient of Variation (CV) were computed.
Results: At the time of the second assessment, patients presented a slight reduction in the number of levodopa daily intakes with a concomitant increase of the mean dose amount per time-interval. Mean levodopa daily dosage and cumulative LED did not vary significantly. After optimizing the dopaminergic therapy, we observed an improvement in daily motor performance in the second assessment as indicated by the reduction of all three indices score.
Conclusions: The application of the Motor Fluctuation Indices to clinical practice might help physicians to evaluate and quantify the entity of motor fluctuations after therapeutic interventions in PD patients.