Non-motor subtyping based on burden of NMS in Parkinson’s disease: first analysis from an international naturalistic study

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OBJECTIVE: To investigate whether in PD there may be subtypes expressing specific non motor symptoms (NMS) or NMS domains from a large international cohort.

BACKGROUND: Non motor dominant clusters of Parkinson’s disease (PD) has been recently described and some have described a cognitive subtypes. A “holistic” Non motor subtyping of these groups have not been attempted.

METHODS: We have analysed data from a NMS naturalistic study to characterize the burden of NMS using an arbitrary cutoff score (>8 = severe burden) on NMS Scale items (NMSS, a 30 question, 9 domain validated NMS scale, each item being rated as frequency x severity) and domains (autonomic, cognitive and sleep) and assigning these “cases” to specific NMS “dominant” profiles. Database analysis identified 6 specific subsets (isolated or in combination) of NMS which independently registered scores of >8 on specific NMSS items, These were named PD-Autonomic, PD-Sleep, PD-Cognitive, PD-Pain, PD-Mood and PD-Fatigue. Amongst PD-Sleep, PD-Cognitive and PD-Mood further subtyping is possible.

RESULTS 1:
A total sample of 1088 patients (males=695; mean age 65.3±10.4 yrs; PD duration 6.7±5.5 yrs) has been investigated.
In 701 (64.4% of total sample; males=462; mean age 67.1±11.0 yrs; mean PD duration 4.5±4.5 yrs) specific NMS profiles could not be assigned as there was NMS overlap and NMS registered <8 on NMSS (Fig.1).
199 patients (18.1% of total sample; males=126; mean age 64.5±10.9 yrs; mean PD duration 7.5±5.7 yrs) had one specific NMS profile.
A further subgroup had two or three dominant NMS profiles.
Regardless of HY stage of PD patients PD-Autonomic, PD-Sleep and PD-Fatigue were the commonest NMS profiles (Fig. 2 and 3).
However, in early motor disease (HY 1), PD-Mood, PD-Sleep and PD-Pain subtypes were common (Fig 3).

CONCLUSIONS: This is the first report of subtypes in PD based on NMS and suggests this may be a valid process particularly in early PD.
Approximately 20% of PD patients may have a specific NMS dominant profile (based on isolated NMS such as fatigue or multifactorial NMS domains (e.g. sleep) across all motor stages.
Autonomic, sleep symptoms and fatigue together represent over two-thirds of cases.