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Relationship between orthostatic hypotension and cognitive functions in multiple system atrophy: a longitudinal study

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Introduction: The aim of this study is to investigate the impact of orthostatic hypotension (OH) on cognitive functions in patients with multiple system atrophy (MSA) [1] followed over time.

Methods: Thirty-two patients were enrolled and underwent a comprehensive neuropsychological battery [2]; at baseline (T0) 15 out of 32 patients presented OH, assessed by means of orthostatic standing test. All patients underwent a follow-up (T1) evaluation 12 months after baseline. Thirteen out of 32 patients underwent a second follow-up (T2) evaluation at 24 months. Changes over time on different neuropsychological tasks were compared between patients with and without OH by means of Mann-Whitney's U test. Moreover, clinical categories of normal cognition, mild cognitive impairment and dementia[3] were determined and changes at T1 and T2 in global cognitive status were compared between patients with and without OH.

Results: At T0, patients with OH had better performance on words/non-words repetition task ($p=.02$) compared to patients without OH. Compared to patients without OH, patients with OH performed worse on semantic association task ($p< .01$) at T1 and on Stroop test-error effect ($p= .04$) at T2. The percentage of patients with worsened cognitive status at T1 was higher among patients with OH than among patients without OH (93% vs 59%, $p=.03$). OH ($\beta= -4.67$, $p=.01$), education ($\beta=.45$, $p=.02$), age ($\beta=.19$, $p=.03$) and MOCA score at T0 ($\beta= -.26$, $p=.04$) were significant predictors of global cognitive status worsening at T1.

Discussion: We found that global cognitive status worsened at one-year followup in 93% of patients with OH and OH, along with age, education, and MOCA score predicted cognitive worsening over time. To clarify the relationship between OH and cognitive dysfunction in MSA, we suggest the use of clinical categories of normal cognition, mild cognitive impairment and dementia in further longitudinal studies on MSA patients with and without OH.

References

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