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Title (type in CAPITAL LETTERS)	URINARY DYSFUNCTION AND ORTHOSTATIC HYPOTENSION IN MULTIPLE SYSTEM ATROPHY - WHICH IS MORE COMMON AND EARLIER MANIFESTATION?

Objectives - Urinary dysfunction and orthostatic hypotension are the prominent autonomic features in multiple system atrophy (MSA). We performed detailed questionnaire and autonomic function tests in 121 patients with MSA concerning both urinary and cardiovascular systems.

Methods - The questionnaire of autonomic symptoms were obtained from 121 patients including 3 clinical variants ; OPCA type in 48, SND type in 17 and Shy-Drager type in 56. Urodynamic studies comprised measurement of post-micturition residuals, EMG cystometry and bethanechol injection. Cardiovascular tests included head-up tilt test, measurement of supine plasma noradrenaline (NA), measurement of R-R variability (CV R-R) and intravenous infusions of NA and isoproterenol.

Results - Urinary symptoms (96%) were found to be more common than orthostatic symptoms (43%) (p<0.01) in patients with MSA, particularly with types of OPCA (p<0.01) and SND (p<0.01). In 53 patients with both urinary and orthostatic symptoms, patients who had urinary symptoms first (48%) were more common than those who had orthostatic symptoms first (29%), and there were patients who developed both symptoms simultaneously (23%). Post-micturition residuals were noted in 74% of the patients. EMG cystometry showed detrusor hyperreflexia in 56%, low compliance in 31%, atonic curve in 5%, detrusor-sphincter dyssynergia in 45% and neurogenic sphincter EMG in 74%. The cystometric curve tended to change from hyperreflexia to low compliance, then atonic curve in the repeated tests. Bethanechol injection showed denervation supersensitivity of the bladder in 19%. Cardiovascular tests showed orthostatic hypotension below -30 mmHg in 41%, low CV R-R below 1.5 in 57%, supine plasma NA below 100 pg/ml in 28% and denervation supersensitivity of the vessels (α in 73%; β 2 in 60%) and of the heart (β 1 in 62%).

Conclusion - From the above results it is likely that urinary dysfunction is more common and often earlier manifestation than orthostatic hypotension in patients with MSA. The responsible sites seem to be central and peripheral for both dysfunction.