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## Neurophysiologic assessment of autonomic nervous system functions in children with primary mono-symptomatic nocturnal enuresis

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**Introduction:** Previous urodynamic studies showed vesical hyperactivity in children suffering from primary mono-symptomatic nocturnal enuresis. Since the process of urination is under the control of the autonomic nervous system (ANS) hence ANS dysfunction may be responsible for the pathogenesis of this disorder.

**Objective:** The aim of the study is to (1) investigate the possible involvement of the sympathetic or the parasympathetic nervous systems in the pathogenesis of primary mono-symptomatic nocturnal enuresis. (2) The select the patients who are potential candidates for anti-cholinergic drug therapy. (3) To monitor the efficacy of anti-cholinergic drug therapy in the control of symptoms.

**Methods:** The study was carried on 28 enuretic children and 35 age and sex matched controls. Non invasive ANS tests [sympathetic skin response (SSR) recorded from the palms and soles, R-R interval variability on normal breathing (HRVN), R-R interval variability with deep breathing (HRVD), Valsalva ratio and 30:15 ratio] were performed in the both groups. Enuretic children were all treated with oxybutynin then they were reevaluated clinically after 3 months of treatment.

**Results:** As compared to the control group, highly significant differences were detected in the R-R interval variability with deep breathing, Valsalva and 30:15 ratios ( $P < 0.0001$ ) however non-significant difference in neither the latencies or the amplitudes of the SSR recorded from either the palm or sole were recorded in the enuretic group as compared to the control group. On clinical follow up after 3 months, 81% of the enuretic children on oxybutynin therapy showed complete control of symptoms and 12 % showed a reduction in frequency of weekly bed wetting to  $\leq 1$  time per week.

**Conclusion:** Hyperactive parasympathetic nervous system may be involved in the pathogenesis of primary mono-symptomatic nocturnal enuresis; anti-cholinergic drugs are potentially useful in the control of symptoms in enuretic children showing abnormal ANS functions.

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