

Assessment of Autonomic Function in Patients with Acute Anticholinesterase Poisoning

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Objective : The aim of the study was to investigate whether the autonomic nervous system is altered by acute anticholinesterase poisoning. **Method :** A cross sectional study carried out to assess the integrity of the autonomic nervous system in patients with acute anticholinesterase poisoning at discharge. Autonomic function was assessed in 23 patients (six- carbamate, 17- organophosphorus). 16 patients were male and the mean age was 35 (SD 13) years. None of them had diabetes; mean HbA_{1c} 5.5% (SD 0.64). Autonomic neuropathy was assessed by the standard measurement of cardiovascular reflexes (table 1) (1,2,3). The first three reflect cardiac parasympathetic integrity, while other two reflect cardiac sympathetic integrity (1). **Results :** The tests reflecting parasympathetic integrity were normal in nine (39%) patients. In 14 (61%) patients, one or more tests were borderline or abnormal. Blood-pressure response to standing was assessed in 22 patients; two (9%) showed borderline results. 20 patients underwent the assessment of blood- pressure response to sustained handgrip; six were able to complete the test; results were within normal. **Conclusions :** 61% of the patients with acute anticholinesterase poisoning had evidence of parasympathetic dysfunction. Although only 9% of patients showed sympathetic dysfunction, this may be an underestimate since these tests give abnormal results only with severe peripheral sympathetic damage. We intend to study further patients and follow up over time to further define the natural history of autonomic dysfunction due to acute anticholinesterase poisoning. **Reference :** (1) Ewing DJ, Clarke BF. Diagnosis and management of diabetic autonomic neuropathy. British medical Journal. 1982 Oct; 285 (2): 916-918. (2) Giorgetti GM, Tursi A, Lani C, et al. Assesment of autonomic function in untreated adult coeliac disease. World j gastroenterol 2004; 10(18):2715-2718. (3) Michael J Aminoff. Evaluation of the autonomic nervous system. Electro diagnosis in clinical neurology. 5th ed. 2005: 410-417

Test	Normal	Borderline	Abnormal
Heart rate response to valsalva manoeuvre (Valsalva ratio- longest R-R interval after the manoeuvre to the shortest R-R interval during the manoeuvre) n=22	≥ 1.21 19	1.11-1.2 3	≤ 1.10 0
Heart rate variation during deep breathing (maximum-minimum heart rate beats/min) n=22	≥ 15 10	11-14 7	≤ 10 5
Heart rate response to standing (30:15 ratio) n=23	≥ 1.04 20	1.01-1.03 3	≤ 1.00
Blood pressure response to standing (fall in systolic blood pressure mm Hg) n=22	≤ 10 20	11-29 2	≥ 30 0
Blood pressure response to sustained	≥ 16	11-15	≤ 10

handgrip (increase in diastolic blood pressure mm Hg)	6	0	0
n=6			

Table 1- Tests, cut off values and results of cardiovascular autonomic function