

ASSESSMENT OF NEUROMUSCULAR JUNCTION (NMJ) FUNCTION BY SLOW REPETITIVE STIMULATION IN PATIENTS FOLLOWING ACUTE ORGANOPHOSPHORUS POISONING (OP)

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Introduction: Clinical presentation of the prolonged action of acetylcholine on the nicotinic receptors is intermediate syndrome. NMJ dysfunction has shown to be the possible reason for intermediate syndrome. Sub clinical NMJ dysfunction may occur following acute OP poisoning. Therefore we have looked into the NMJ function by slow repetitive stimulation.

Method: A case-control follow up study was conducted. NMJ function was assessed by supramaximal slow repetitive stimulation of the median nerve administering 10 stimulations at a rate of 3Hz at the wrist, at rest (A), immediately after 30 seconds maximal isometric exercise of the thumb (B), and two minutes after the exercise (C). Assessment was done in 21 patients with acute OP poisoning around the time of discharge (participants were otherwise well) and 1-2 months later. Assessments were performed a mean of 8 ± 8 days (first assessment) and 46 ± 9 days (second assessment) from exposure. 21 controls matched for age and gender were examined. Decrement response were determined by calculating the ratio of the amplitude of the fourth to the first action potential at rest (A4/A1), immediately after 30 seconds maximal isometric exercise of the thumb (B4/B1) and two minutes after the exercise (C4/C1). Post exercise facilitation was assessed by calculating the ratio of the amplitude of the first action potential in the second train to the amplitude of the first action potential of the first train (B1/A1) and post exercise exhaustion by calculating the ratio of the amplitude of the first action potential of the third train to the amplitude of the first action potential of the first train (C1/A1). ANOVA and Post Hoc comparison were used for the analysis. **Results:** The mean ages of cases (and controls) was 31 ± 13 years and there were 16 males in each group. Three patients were admitted to the Intensive Care Unit during the hospital stay, two were ventilated. All patients were treated with atropine. Nineteen patients received pralidoxime. F values (ANOVA) of A4/A1, B4/B1 and C4/C1 were 0.46, 0.85 and 0.03 respectively. F values of post exercise facilitation and post exercise exhaustion were 0.26 ($p=0.77$) and 0.30 ($p=0.73$) respectively. None of the F values were statistically significant. Post Hoc comparison did not show statistically significant decrement response, post exercise facilitation and post exercise exhaustion between the test and the controls. **Conclusion:** There was no sub clinical NMJ dysfunction detectable by supramaximal slow repetitive stimulation once patient is recovered.