

Efficacy of Magnesium Sulfate for treating the acute Organophosphate pesticide poisoning. A Pilot Trial.

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Objectives: Acute organophosphorus (OP) poisoning is relatively common and the major killer due to poisoning in developing countries. Traditional use of atropine and pralidoxime failed to reduce the attendant mortality and morbidity. Magnesium has been used in small scale studies in OP poisoning with variable success. So, understanding the administration and therapeutic benefit of magnesium sulfate regarding management need to be evaluated. **Methods:** This controlled trial was performed at the Department of Adult Medicine Unit in Dhaka Medical College. The diagnosis of acute OP poisoning was based on the definite history of ingestion of known OP compound. Patients were divided into two groups. The consecutive four patients underwent the magnesium sulfate treatment followed by one control. Both groups received the standard treatment comprising of gastric lavage with IV atropine and pralidoxime until recovery or death plus supportive and intensive care therapy as decided by the discretion of the clinician. The test group received magnesium sulfate (20% MgSO₄.7H₂O) at a dose of 4g/day IV over 10-15min and that was increased every 10 patients to a rate of upto 16g/day. The patient was under close observation and monitoring for any adverse reaction like significant clinical neuromuscular disturbance and respiratory depression. **Results:** During the study period a total of 90 patients were admitted; 50 (32 male, 18 female) patients were assigned for study with MgSO₄ (40 patients, average age 25.2 ±10.04 years) and without MgSO₄ (10 patients, average age 24.4 ±9.24 years). MgSO₄ group was further divided into 4 set. Four gram was given in first group (16 patients) then 8 gram in second (8 patients), 14 gram in third (8 patients) and 16 gram in last group (8 patients). The mean amount of atropine required in the 16gm group was 98.18 ±66.47mg compared to the non-MgSO₄ group 337.26 ±406.77 mg (p=0.351). There was no significant difference in blood magnesium before and after intervention among the groups, but urinary magnesium level was statistically different between 16 gm (195.62 ±61.82 mg) and controls (98.38 ±25.63 mg) (p = 0.054). No adverse reaction observed was among magnesium sulfate groups. Nevertheless intermediate syndrome developed in 8gm and 14 gm groups; 2 in each. The outcome of the patients was significantly different among the groups with a p value < 0.05. **Conclusion:** A small randomised study with 4 gm magnesium in acute OP poisoning has been reported to decrease mortality (1). We escalated the magnesium dose upto 16 gm without any adverse effect. This study is very small; numerous parts of the methodology were incompletely described. Thus we believe further research is required before this treatment can be universally recommended. **Reference:** 1. Pajoumand A, Shadnia S, Rezaie A, Abdi M, Abdollahi M. Benefits of magnesium sulfate in the management of acute human poisoning by organophosphorus insecticides. *Hum Exp Toxicol* 2004;23(12):565-9