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Effect of lipid emulsion on laboratory parameters in patients with organophosphate compound poisoning

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Objective: To study the safety of 100 ml of 20% Lipid Emulsion (Intralipid) in patients presenting with organophosphate compound (OPC) poisoning. Intralipid has been used successfully to reverse the toxicities of many lipophilic compounds but the effect on OPC poisoning has not been studied systematically. We wanted to study the safety of intralipid administration in OPC poisoning and its effect on various biochemical and hematological parameters 24 hours after administration.

Methods: A prospective open label pilot study was carried out at a tertiary care hospital in North India. Forty patients were enrolled and treated with atropine and supportive care without 2-PAM. A single dose of 100 ml of 20% Intralipid was administered intravenously over 30 minutes at admission. Patients were monitored until discharge or death. Vital parameters, hematologic, biochemical parameters were recorded at admission and at 24 hours interval. Outcome assessed was mortality.

Results: out of 40 patients, 57.5% were males. The mean age was 30.9 years. There was no significant change observed in hematological (hemogram, platelets, total leukocyte count) and biochemical parameters (serum electrolytes, renal functions, liver functions and serum cholinesterase levels) after administration of Intralipid. At 24 hours 17.5% developed hypertriglyceridemia. The rest of the lipid profile remained unchanged. The mean duration of hospital stay was 4.8 days. There were no major complications noted with Intralipid infusion. 4 patients died in the treatment group but none was directly related to Intralipid administration.

Conclusion: Lipid emulsion is safe and does not have significant effect on the measurement of laboratory parameters 24 hours post administration. Since the mortality remains unchanged, its role in the management of organophosphate poisoning needs further evaluation.

Investigational parameter	Presentation (prior to therapy)		24 hours after administration of lipid emulsion	
	Mean(SD)	Median	Mean (SD)	Median
Hemoglobin (g/dL)	12.9 (2.8)	13.2	12.4 (2.5)	13
Total leukocyte count (cells/µL)	15218 (5807)	14300	15318 (7295)	13400
Platelet count (x 10^9/µL)	262 (11.4)	258	249 (9.4)	223000
Sodium (mmol/L)	145 (7.3)	144	145 (6.5)	143
Potassium(mmol/L)	3.9 (0.5)	3.9	4 (0.4)	4
Serum urea (mg/dL)	27 (10.8)	27	33 (16.9)	27
Serum creatinine (mg/dL)	0.9 (0.3)	0.8	1 (0.5)	0.8
Serum bilirubin (mg/dL)	0.8 (0.3)	0.7	0.9 (0.6)	0.8