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ORIGINAL ARTICLE

**ESTIMATION OF SERUM AMYLASE AND LIPASE LEVELS IN CORRELATION WITH
CLINICAL OUTCOME OF ORGANOPHOSPHORUS POISONING**

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ABSTRACT

Organophosphorus is poisoning producing clinical alterations in the serum amylase and lipase activity. The male and female patients were tested the serum in their blood. The serum level and outcome were analysed in male and female patients. The results were discussed

Keywords: Serum amylase, serum lipase, organophosphorus

1.INTRODUCTION

Organophosphorus compounds are used as pesticides, herbicides, and chemical warfare agents in the form of nerve gases. Its widespread use and easy availability has increased the likelihood of poisoning with these compounds.

OPC's acts by inhibiting the enzyme cholinesterase, resulting in accumulation of acetylcholine at synapses and myoneural junction leading to cholinergic over activity. Mortality ranges from 4-30% in Indian studies. Respiratory Failure is most common complication of OP poisoning leading to death. Early recognition and prompt ventilator support may improve survival. Neurologic, cardiac, and respiratory complications are the main causes of morbidity and mortality in these patients. The involvement of other systems can also occur but it is very uncommon.

2.OBJECTIVES

To study the clinical profile and outcome of organophosphorus poisoning in relation with serum amylase & lipase levels.

3.METHODOLOGY

50 patients who are admitted to RMMCH (October 2013 – October 2015) with history of consumption of organophosphorus compounds within 24 hrs are included in the study. The detailed history & clinical examination are done for all the patients. Serum amylase & lipase levels will be taken at the time of admission and on 3rd

day. Serum cholinesterase levels will be taken at the time of admission. All the patients are followed up till the time of discharge for any complications.

INCLUSION CRITERIA:

1. Patients who have consumed organophosphorus compounds with clinical manifestations suggestive of organophosphorus poisoning.
2. Patients who have consumed organophosphorus compound without alcohol ingestion.
3. Patients of age group between 20 – 70 yrs.
4. Patients who are brought to hospital within 24 hours of poison ingestion.

EXCLUSION CRITERIA:

1. Patients who have consumed poisons other than organophosphorus compounds, mixed compounds.
2. Patients who have consumed organophosphorus compounds along with alcohol.
3. Other modes of ingestion (skin, ear, eye)
4. Patients with chronic respiratory illness.
5. Patients on long term steroids and other drugs like aspirin, ocp, diuretics, analgesics.
6. Patients with malignancy.
7. Patients with gall stone disease.
8. Patients with lipid disorders.
9. Patients with renal or hepatic diseases.
10. Patients with chronic heart diseases.

11. Patients with neuromuscular diseases

4.RESULTS

In our study majority of the patients (36%) belonged to age group 21-30yrs. Males outnumbered females. Among the

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total cases, 42 (84%) were males and 8 (16%) were females. The most marked muscarinic sign in our study was bronchorrhoea (80%), salivation (74%), and emesis (68%) followed by other manifestations. The most common nicotinic effect was fasciculations (14%). Among the CNS manifestations headache was reported in 24% of cases. Hyperamylasemia was reported in 33 cases (66%) and elevated lipase levels were reported in 21 cases (42%).Lipase was elevated only in cases in whom amylase levels were also elevated. Mortality was higher in patients with very low serum cholinesterase levels (<800). The overall mortality in our study was 26%.

Table 1 Gender Wise Distribution

Gender	No. of patients (n = 50)	Percentage
Male	42	84.00
Female	8	16.00

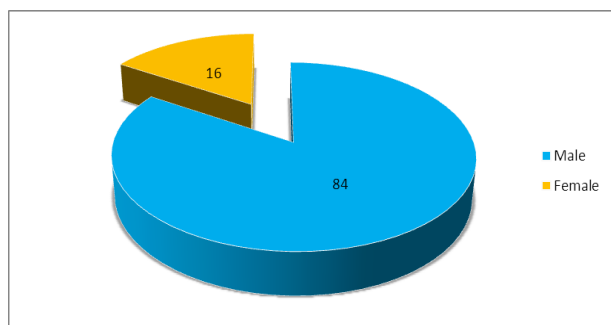


Table 2 Serum amylase and outcome

Amylase	0-100	100-200	200-300	>300
No. of patients	8	17	8	17
Death	-	-	1	12
Discharged	8	17	7	5

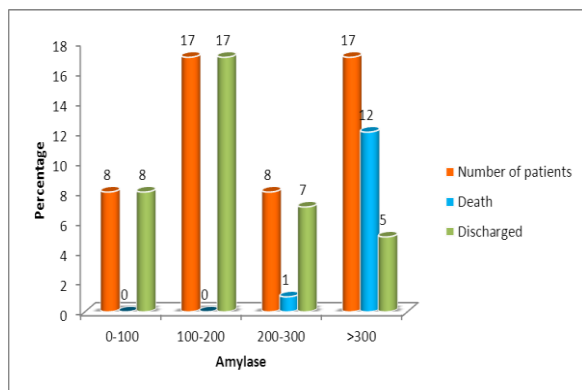
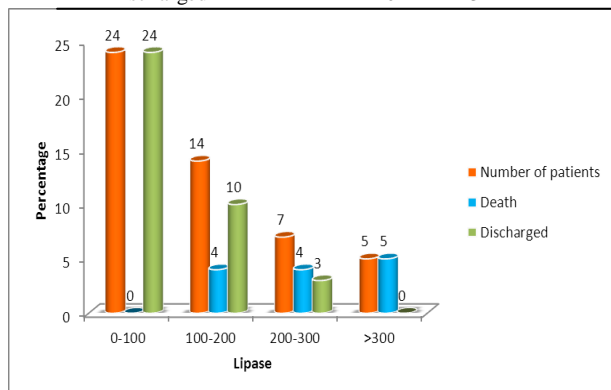
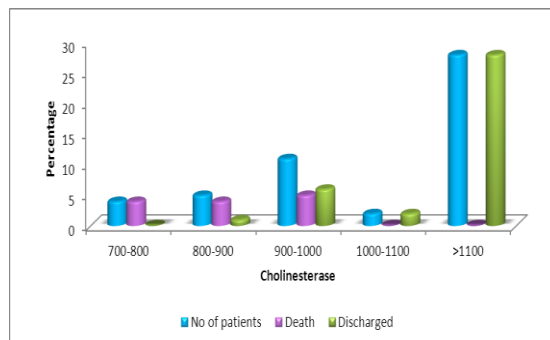


Table 3 Serum lipase and outcome

Lipase	0-100	100-200	200-300	>300
No. of patients	24	14	7	5
Death	-	4	4	5
Discharged	24	10	3	-



Cholinesterase	No of patients	Death	Discharged
<800	4	4	-
800-900	5	4	1
900-1000	11	5	6
1000-1100	2	-	2
>1100	28	-	28



4.DISCUSSION

In our study majority of the patients (36%) belonged to age group 21-30yrs.This is consistent with other studies [1-3]. The common risk factors associated with this group include stress of school, failure in college, love affairs & conflict with parents.

Males outnumbered females.Among the total cases, 42 (84%) were males and 8 (16%) were females.This data is similar to that of the studies by Gupta et al ; Kamath.P.G et al [1,2,4]. The accumulation of ACH in the nerve terminals results in continued stimulation & subsequent paralysis of receptors which accounts for muscarinic, nicotinic & CNS effects. Clinical manifestation can vary from mild to severe forms depending on various factors.

The most marked muscarinic sign in our study was bronchorrhoea (80%), salivation (74%), and emesis(68%) followed by other manifestations. The most common nicotinic effect was fasciculations (14%). Among the CNS manifestations headache was reported in 24% of cases.[5,6]

In our study hyperamylasemia was reported in 33 cases (66%) and elevated lipase levels were reported in 21 cases(42%).Lipase was elevated only in cases in whom amylase levels were also elevated. Isolated elevation of lipase was not reported .Mortality was also higher in this group of patients in whom amylase and lipase levels were elevated to more than 3 folds. Similar values were reported in studies by Ahmed arshiya et al [7,8,9].

Organophosphorus compounds are cholinesterase inhibitors. The manifestation of organophosphorus poisoning is characterized by low serum cholinesterase levels. Mortality was 100% (sr.cholinesterase< 800) , 80 % (800-900) & 45% (900-1000).[10,11].

In our study mortality rate was higher with monocrotophos (42%), followed by chlorpyriphos (24%) and profenofos (12%). Our findings are consistent with other studies like Gupta et al [1]; Kamath PG[2].

Respiratory failure is the most common dreaded complication in organophosphorus poisoning leading to mechanical ventilation and death .cidosis was reported in 24 (48%) patients. Among the 24 patients, death was reported

in 13(26%) patients. 11(22%) patients survived after mechanical ventilation. The overall mortality in our study was 26%. This is slightly higher when comparing with other available studies [2,12].

5.CONCLUSION

There is male preponderance in our study. Most commonly affected age group is between 21 – 30yrs.Higher mortality was reported with monocrotophos and chlorpyriphos compounds. Patients with high amylase and lipase levels landed up in respiratory failure and mechanical ventilation. Other clinical symptoms were also reported in patients with raised amylase and lipase levels. Death was reported in patients in whom amylase and lipase levels were increased to a greater extent. Patients with low serum cholinesterase levels had bad prognosis. This study highlights that serum amylase and lipase can be used as a marker for recognition of severity and predicting outcome in opc poisoning.

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