

ORIGINAL ARTICLE

## A Study on Clinical Profile & Prognostic Indicators in Patients with Acute Poisoning

Gosai. Kanugir. R<sup>1\*</sup>, Gosai. Jigarkumar. B<sup>2</sup>

<sup>1</sup>M.D.Medicine, Assistant Professor, Department Of Medicine, Gmers Medical College, Gotri, Vadodara, <sup>2</sup>M.D. Anaesthesia, Assistant Professor, Department Of Emergency Medicine, B.J.Medical College, Ahmedabad.

### ABSTRACT

**BACKGROUND:** Organophosphorus poisoning is associated with significant morbidity and mortality in developing countries. This study was done to study common clinical profile & predictors for poor prognosis in these patients. **MATERIALS AND METHODS:** Patients admitted to tertiary care centre between the November 2013 and November 2014, with history of organophosphorus poisoning were studied, with preformed proforma. Data analysis was done with the help of computer using SPSS 17.0. **RESULTS:** Out of 50 patients included in the study, majority were male (80%) & highest 46% in between the age group of 21-30 years. Most common cause was suicidal (97.5%), commonly affecting illiterates & primary school educated people (42.5%) and from rural area (72%). Most common compound was organophosphorous (66%) followed by ratkiller (24%). Most common finding abdominal pain (88%), vomiting (70%) followed by altered sensorium (36%). Higher mortality was associated with S.cholinesterase level <2000 IU/Lt on admission (P value: 0.0001) & interval >6 hours between ingestion and admission (P value: 0.0289). **CONCLUSION:** Organophosphorus poisoning has become a common mode of suicide among developing countries. The ease of availability of the poison and the poor health care facility has caused a higher mortality rate.

**Key words:** organophosphorous poisoning, clinical profile, prognostic predictors

### INTRODUCTION

Poisoning, both accidental and suicidal, is a significant contributor to mortality and morbidity throughout the world. According to WHO, approximately three million acute cases with 2, 20,000 deaths occur annually. Out of this, 90% of fatal poisoning occurs in developing countries<sup>1</sup>. Organophosphorous compounds are principally used as pesticides, and their exposure is highly prevalent in developing countries. Toxic effects of organophosphorus compound are associated with significant morbidity and mortality making it a major global clinical problem. Their ease of access and socio-cultural factors play important role in the choice of organophosphorus compound as a self-Poison. The incidence is higher in young, economically active group with a case

fatality ratio of 4-30%.<sup>1,2,3</sup> The importance of pesticides in India can be understood from the fact that agriculture is a major component of the Indian economy. It contributes 22% of the nation's GDP and is the livelihood of nearly 70% the country's workforce. In India, use of insecticides, accounted for 67% of the total pesticide consumption in 2006. The potential adverse impact on human health from exposure to pesticides is likely to be higher in countries like India due to easy availability of highly hazardous products and low risk awareness. Suicidal poisonings are common with pesticides as they are cheap and easily available in market.<sup>4</sup>

### MATERIAL AND METHODS

This prospective study comprises of 50 cases of acute poisoning admitted at tertiary care centre, from November 2013 to November 2014. Data regarding the age, gender, religion, socio-economic class, marital status, literacy, poisonous agent and route of exposure were collected according to the history given by patient or their relatives. A complete history, general examination and systematic examination were carried out in each case & basic

### \*Corresponding Author:

Dr. Kanugir. R. Gosai  
101, Mithila-2, Opp: Tatanagar,  
New Mental Campus,  
Meghanagar, Ahmedabad, 380016  
Contact No: 9924209959, 9924209954  
Email: drdharagosai@yahoo.co.in

investigations were carried out in all patients. Treatment was given specific to the cases and outcome was observed. Ethical approval was taken from Institutional Ethics Committee. Data analysis was done with the help of computer using SPSS 17.0

**RESULTS**

50 cases of Acute Poisoning admitted at our hospital from November 2013 to November 2014 were enrolled in this study.

**Table 1: Age & Sex Distribution**

Age groups in years	Sex		Total
	Males	Females	
<20	4	2	6 (12%)
21-30	17	6	23 (46%)
31-40	4	2	6 (12%)
>40	15	0	15(30%)
Total	40	10	50

Majority of poisoning cases were between 21-30 years of age (46%) followed by >40 years of age (20.8%). It might be due to the fact that 20-30 years of age is the determining factor of the life in terms of studies, services, marriage and other settlement factors. Male cases (80%) were more than females (20%).

**Table 2: Socioeconomic Distribution**

Socio-economical status	No. Of cases	Percentage
Lower	36	72
Lower middle	14	28
Total	50	100

More than half of the cases (72%) belonged to lower socio economic class while 28% cases were from middle socioeconomic class. The middle and lower socioeconomic classes are more vulnerable due to the fact that they are under more financial stress. Majority of the cases (72%) were from rural area and 28% cases were from urban area because rural population is more exposed to insecticides in agricultural field and there is frequent inhabitation of poisonous reptiles in unhealthy and hilly rural areas. 93% were suicidal while 7% were accidental in nature.

**Table 3: Educational Status**

Educational status	No. Of cases	Percentage
Illiterate	2	4
Primary	28	56
10 <sup>th</sup>	2	4
Higher secondary	8	16
Graduate	4	8
Post graduate	6	12
Total	50	100

The incidence of poisoning was also more in illiterates & up to primary educated people (60%) than the literates (40%). Predominance of the illiterate group may be due to the fact that they have lack of knowledge to solve their problems with financial and economical stress.

**Table 4: Distribution of Various Types Of Poisoning**

Type of compound	No. Of cases	Percentage
Organophosphorous	33	66
Ratkiller	12	24
Other	5	10
Total	50	100

In the present study, organophosphate compounds (66%) were the most commonly used poison followed by ratkiller compounds (24%). It is due to abundant use of organophosphate compounds as insecticides, and being less costly and easily available.

**Table 5: Clinical Symptoms on Presentation**

Symptoms	Present study	Singh et al <sup>10</sup>	Kamath et al <sup>11</sup>	Gupta et al <sup>12</sup>	Doshi et al <sup>13</sup>	Thungag et al <sup>14</sup>
Abdominal pain	88%	-	40%	-	52%	-
Vomiting	70%	95%	12%	28%	28%	69%
Diarrhoea	12%	55%	4%	55%	12%	-
Altered sensorium	36%	60%	32%	60%	8%	28%
Respiratory distress	8%	-	-	-	-	-
Seizures	0%	-	-	-	-	1%
Coma	4%	-	-	-	-	-

Most common presenting symptom was Abdominal pain (88%) followed by vomiting (70%) followed by altered sensorium in 33%, which was compared with other studies.

**Table 6: Corelation of Interval between Ingestion & Arrival with Outcome**

Time after ingestion	No. Of cases	Expired	Discharged	Mortality %
<3 hr	11	0	11	0%
3-6 hr	24	2	22	8.33%
>6 hr	15	5	10	33%

P value: 0.0289

We have observed that patients admitted > 6 hours after ingestion had highest mortality (33%) as compared to 8.33% in patients admitted between 3-6 hours after ingestion & 0% in patients admitted within 3 hours of ingestion (P value: 0.0289), which is highly significant.

**Table 7: Association between S.Cholinesterase Level & Outcome**

Serum cholinesterase level(IU/L)	No of cases	Expired	Discharged	Mortality %
<2000	11	7	4	63.6%
>2000	39	0	39	0

P value: 0.0001

Mortality was high (63.6 %) in patients with S. cholinesterase levels between <2000 IU / Lt which was correlated with severity of poisoning & outcome.

**DISCUSSION**

Organophosphate and carbamates frequently used pesticides can result in serious morbidity and mortality with over 50,000 organophosphorous compounds have been synthesized since the first one by Clermont in 1857. The clinical symptoms range from the classic cholinergic syndrome to flaccid paralysis and intractable seizures, with mortality ranging from 10 to 22%. About 99% of fatal poisonings occur in developing countries, particularly among farm workers.

Present study included 50 cases in the age group of 18 to 65 years. Majority (46%) were in the age group of 21-30 years. These are consistent with the findings of Guven Met al.<sup>5</sup> where in a similar study the mean ages were 24.1 and 33.95 years in the age group of 21-30 years and 31-40 years respectively. Dassanayake T et al<sup>6</sup> of Srilanka documented that 91% of their cases were under the age of 30 years.

In our study incidence of organophosphorus poisoning was higher in males (58.75%) when compared to females. These findings are consistent with studies conducted by Murat S et al<sup>1</sup> where 51% were males & 46% were females. With the ease of availability, it is not surprising that the use of organophosphorus compounds in suicide attempts have increased as the commonest mode of suicidal poisoning. This was also observed in our study. 93% were suicidal. It was also reported to be 67% by AM Saadehet al<sup>7</sup> while Murat s et al<sup>1</sup> reported 68% cases to be suicidal.

In our study, organophosphorous poisoning was seen in 66% and followed by

ratkiller poisoning (24%) which similar to the study conducted by Murat S et al.<sup>1</sup> these was easy availability & low cost of the substance.

In our study majority of cases 80% were from rural areas compared to 20% from urban areas. These Findings were consistent with study conducted by Otto K Ret al<sup>8</sup> who observed higher incidence of poisoning in the rural areas (70.8%) than in towns. Dalalet al<sup>9</sup> reported a similar higher incidence (70.5%) in rural areas. Low educational status, low socioeconomic status and poor living conditions in rural areas could be possible reason.

High mortality was associated with interval between ingestion of substance > 6 hours, S.cholinesterase < 2000 IU/Lt on admission. As interval between ingestion & arrival increased, severity of poisoning increased & cholinesterase level decreased which were poor prognostic predictors.<sup>15</sup>

**CONCLUSION**

Organophosphorous poisoning is most prevalent in the age group of 21-30 years. Incidence is more common in males. The incidence is higher among illiterates. The most common intention was suicidal. Organophosphorous poisoning is more common among agricultural labourers and unskilled workers.

**REFERENCES**

1. Murat S, Guiven M. Intensive care management of organophosphate insecticide poisoning. Crit Care 2001;5(4):211-215
2. M. Eddlestron, L. Szinicz, P.Eyer. Oximes in acute organophosphorous poisoning: a systematic review of clinical trials. QJ Med.J. 2002; 275 – 283
3. Cherian MA, Roshini C, Visalakshi J. Biochemical and Clinical Profile After Organophosphorus Poisoning – A Placebo – Controlled Trial using Pralidoxime. JAP1 May 2005; 53: 427-430
4. Berger LR. Suicides and pesticides in Sri Lanka. AmJ Public Health, 1988;78:826-827
5. Guven M, Dogukan A, Taskapan H. Lcukocytosis as a parameter in

- Management of Organophosphate Intoxication Turk J Med Sci 2000;30:499-500
6. T Dassanayake, V Weerasinghe, U Dangahadeniya, K Kularatne, A Dawson, L Karalliedde,etal.Clinical Neurophysiology, 2008;119:144-150
  7. Saadeh AM, Farsakh NA, Ali MK. Cardiac manifestations of acute carbonate and organophosphate poisoning . Heart 1997; 77: 461-464
  8. Otto KR, Spate HF. Suicidal trends in Urban and rural districts of Brandenburg. PsychiatriNeuro Med Psychol. 1975;27(4):239-46
  9. Dalal JS, Gorea RK, Aggarwal AK, Thind AS and Sandhu SS. Poisoning Trends- A postmortem study. Journal of Indian Academy of Forensic Medicine 1998;20(2):27-31
  10. Singh S et al. Parathion poisoning in Punjab. JAPI 1969;17:181-187
  11. Kamath PG, Dalgı AJ and Patel BM. Diazinon poisoning. JAPI 1964;14:477-481
  12. Gupta B et al. Organophosphorus poisoning facts and myths. Medicine Update, 1999;1345-1348
  13. Doshi JC, MK Katakia and HM Baxamusa.Organophosphorus poisoning. Journal of Postgraduate Medicine; 11(2): 1964
  14. Thunga G et al. Evaluation of incidence, clinical characteristics and management inorganophosphorus poisoning cases in a tertiary care hospital. Journal of Toxicology and Environmental Health Sciences 2010; 2(5):73-76
  15. Arup KK et al. Predictors of mortality in OP poisoning- Hospital based study from suburban West Bengal. JAPI 2001; 49:91