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To assess the outcome in patients with acute OP poisoning requiring mechanical ventilation

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Abstract

Background: Organophosphorus (OP) pesticide poisoning is a serious occupational hazard. The present study was conducted to assess the outcome in patients with acute OP poisoning requiring mechanical ventilation.

Materials & Methods: The present study was conducted on 56 patients of OP poisoning admitted to emergency ward of both genders. In all patients, mode of poisoning, reason for ingestion/poisoning, time from ingestion of OP to administration of PAM (Lag time) and duration of mechanical ventilation was recorded.

Results: Out of 56, males were 34 and females were 22. Out of 56, 42 survived and 14 expired. out of 14 patients, 10 were suicidal and 4 were accidental. The difference was significant ($P < 0.05$). Severity of poisoning was mild in 6, moderate in 5 and severe in 3.

Conclusion: Patients put on mechanical ventilator for organophosphorus poisoning had maximum reason of suicidal cases.

Keywords: Organophosphorus, poisoning, suicidal

Introduction

Organophosphorus (OP) pesticide poisoning is a serious occupational hazard accounting for more than 80% of pesticide-related hospitalisation. India being an agriculture-based country, OP pesticide remains the main agent for crop protection and pest control. Poisoning with OP compounds is a global public health problem [1]. According to World Health Organization (WHO), 3 million cases of pesticide (mainly OP compounds) poisoning occur every year, resulting in an excess of 250,000 deaths. Of these, about 1 million are accidental, and 2 million are suicidal poisonings [2].

As per estimates of National Crime Bureau of India, suicides by consumption of pesticides account for 19.4 and 19.7% of all cases of suicidal poisoning in the year 2006 and 2007, respectively. It is therefore likely to have adverse effects on farmers who are accidentally over exposed while handling these pesticides. However, because of low cost and easy availability, it has also become an agent of choice for self-poisoning [3]. Pesticide self-poisoning is responsible in killing approximately 300,000 people worldwide every year and mostly from rural background. In developing countries the mortality can be as high as 70%. High mortality could be probably due to lack of hospital services in the vicinity, inadequate transport facility, increased patient to care givers ratio, and finally non-availability of definite antidote [4]. The present study was conducted to assess the outcome in patients with acute OP poisoning requiring mechanical ventilation.

Materials and Methods

The present study was conducted in the department of Anesthesiology. It comprised of 56 patients of OP poisoning admitted to emergency ward of both genders. Data related to them were entered in case file based on data obtained from relatives.

In ICU the patients were managed as per the ICU protocols. Patients requiring ventilatory support were initially put on assist pressure control mode and subsequently weaned off by synchronised intermittent mandatory ventilation (SIMV), pressure support (PS) ventilation. Severity of poisoning was graded using modified Dreisbach's classification. In all patients, mode of poisoning, reason for ingestion/poisoning, time from ingestion of OP to administration of PAM (Lag time) and duration of mechanical ventilation was recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

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Results

Table I: Distribution of patients

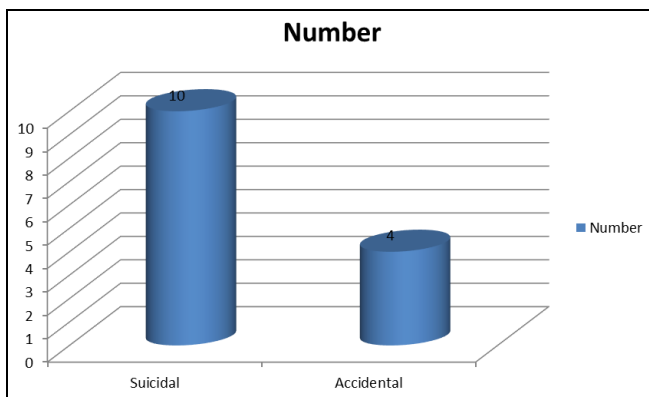
Total- 56		
Gender	Males	Females
Number	34	22

Table I shows that out of 56, males were 34 and females were 22.

Table II: Outcome of Poisoning

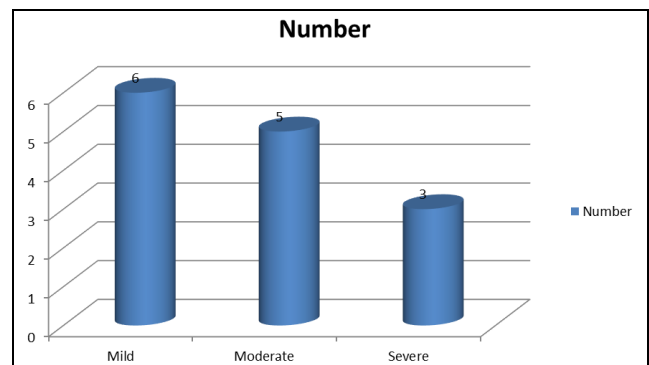
Total	Survived	Expired
56	42	14

Table II shows that out of 56, 42 survived and 14 expired.



Graph I: Cause of poisoning

Graph I shows that out of 14 patients, 10 were suicidal and 4 were accidental. The difference was significant ($P < 0.05$).



Graph II: Severity of poisoning

Graph II shows that severity of poisoning was mild in 6, moderate in 5 and severe in 3.

Discussion

Organophosphorus pesticide self-poisoning is a major clinical and public-health problem across much of rural Asia [5]. Of the estimated 500 000 deaths from self-harm in the region each year, about 60% are due to pesticide poisoning. Many studies estimate that organophosphorus pesticides are responsible for around two-thirds of these deaths-a total of 200 000 a year. Deaths from unintentional organophosphorus poisoning are less common than those from intentional poisoning and seem to be more common in regions where highly toxic organophosphorus pesticides (WHO Class I toxicity) are available [6]. The present study

was conducted to assess the outcome in patients with acute OP poisoning requiring mechanical ventilation.

In present study, out of 56, males were 34 and females were 22. We found that out of 56, 42 survived and 14 expired. Namba T *et al.* [7] found that 91.86% (79/86) of cases were suicidal and remaining cases were accidental. Duration of mechanical ventilation varied from less than 48 hours to more than 7 days. Mortality rate was 33.3%, 7.2%, and 100% in those who required mechanical ventilation for more than 7 days, 5 to 7 days, and 2 to 4 days, respectively. Lag time was less than 6 hrs in 13 patients and all of them survived. 17.1% and 28.1% patients died in whom PAM was started 6 to 12 hrs and 13 to 24 hrs after poisoning, respectively. There was statistically significant positive correlation between lag time of starting of PAM with duration of mechanical ventilation and total dose of PAM ($P < 0.0001$). None of the predictors age, lag time, severity of poisoning, and duration of ventilation were independent predictors of death. Overall mortality rate was 18.6%.

In this study, out of 14 patients, 10 were suicidal and 4 were accidental. We found that severity of poisoning was mild in 6, moderate in 5 and severe in 3. Organophosphorus pesticides inhibit esterase enzymes, especially acetylcholinesterase in synapses and on red-cell membranes, and butyrylcholinesterase in plasma. Although acute butyrylcholinesterase inhibition does not seem to cause clinical features, acetylcholinesterase inhibition results in accumulation of acetylcholine and overstimulation of acetylcholine receptors in synapses of the autonomic nervous system, CNS, and neuromuscular junctions [8]

Ahmed *et al.* [9] reported that the overall mortality was 29.06% which was within the range of the previous studies. Interestingly, all the patients (100%) who were on ventilator for less than 2 days, expired. These patients probably had increased lag time or reported late to the A and E resulting in severe degree of poisoning leading to severe respiratory failure.

Conclusion

Authors found that patients put on mechanical ventilator for organophosphorus poisoning had maximum reason of suicidal cases.

References

1. Eddleston M. Patterns and problems of deliberate self-poisoning in the developing world. *Q J Med* 2000; 93:715-31.
2. Eddleston M, Phillips MR. Self-poisoning with pesticides. *BMJ*. 2004; 328:42-4.
3. Buckley NA, Karalliedde L, Dawson A, Senanayake N, Eddleston M. Where is the evidence for the management of pesticide poisoning – is clinical toxicology fiddling while the developing world burns? *J Toxicol Clin Toxicol* 2004; 42:113-6.
4. Haddad LM. A general approach to the emergency management of poisonings. In: Haddad LM, Winchester JF, editors. *Clinical Management of Poisonings and Drug Overdose*, 3rd ed. Philadelphia, PA: WB Saunders, 1983, 4-18.
5. Dreisbach RH. Cholinesterase inhibitor pesticides. *Handbook of poisoning*, 11th ed. California: Lange Medical Publications, 1983, 106-14
6. Hayes WJ. Organophosphate insecticides. In: Hayes WJ, editor. *Pesticides Studied in Man*. Baltimore, MD:

- Williams and Wilkins, 1982, 285-315.
7. Namba T, Nolte CT, Jackrel J, Grob D. Poisoning due to organophosphate insecticides. Acute and chronic manifestations. *Am J Med.* 1971; 50:475-92.
 8. Hayes MM, Van der Westhuizen NG, Gelfand M. Organophosphate poisoning in Rhodesia. *S Afr Med J.* 1978; 54:230-4.
 9. Ahmed SM, Das B, Nadeem A, Samal RK. Survival pattern in patients with acute organophosphate poisoning on mechanical ventilation: A retrospective intensive care unit-based study in a tertiary care teaching hospital. *Indian J Anaesth.* 2014; 58:11-7.