

Clinical Characteristics of Organ Phosphorus Compound Poisoning and Associated Factors Related to the Outcome of Intermediate Syndrome: A Cross-Sectional Study

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Abstract

Background and Aim: Organophosphorus compounds (OPC) outlines a chief significant group air a probable danger. India being agriculture based country; OPC has made their run fruitfully into agriculture division but at a price of many lives. The aim of current study is to examine the clinical silhouette of intermediate syndrome in patients with OPC poisoning. *Material and Methods:* Present cross-sectional study was conducted at Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat. Thirty Nine patients showing symptoms of Intermediate syndrome are explored largely and built-in in the research. Ventilator support patients are evaluated for the phase on ventilator and growth of ventilator associated pneumonia (VAP). Results of IMS were linked with type of compound, quantum of exposure, period of IMS, and respiratory failure. *Results:* Uneven distributions in gender were observed with male dominating the study. Out of 39 OPC exposed patients, about 33 were improved and 06 were died. Out of 39, 15 patients consumed >120 ml of OPC. Of them on management, 9 are enhanced and 6 were expired and this dissimilarity were significant ($p \leq 0.05$) Respiratory failure caused significant number of mortality ($p = \leq 0.05$). *Conclusion:* The occurrence of IMS in organophosphorus poisoning should be recognized in premature stages and cautious management, monitoring and follow up of affected patients are desirable to decrease the demises.

Keywords: Kutch; Organophosphorus Compounds; Respiratory Failure; Ventilator.

Introduction

In this recent epoch of Industrialization, humans are endlessly bare to diverse number of ecological pollutants. Out of them, pesticides such as organophosphorus compounds (OPC) summarize a main noteworthy group air a possible threat [1]. In developing country like India, pesticide self-poisoning is responsible in butchery numerous citizens of rural areas as these complexes are naturally accessible at low price and the death pace was as elevated as 70% [2-4]. OPC demonstrates their act in individuals in three stages Sthat is acute cholinergic crisis, intermediate syndrome (IMS) and delayed neuropathy. With them IMS is the chief causative aspect of OPC connected noxious things and demise [5].

Numerous researches are carry out on OPC to make out their etiology, occurrence, risk factors related and management [6]. however there is a requirement of precise information linked to pathophysiology and details about medical outline and result of patients that may be reason of IMS. Hence, present research was organized with an intend to learn the clinical outline of IMS in patients with OPC poisoning, to assess the occurrence IMS in relation to various types of OPC, to learn the results of IMS in revival or demise and to associate the result of IMS with form of compound, etc.

Material and Methods

Present cross-sectional study was conducted at

Gujarat Adani Institute of Medical Science, Bhuj, Kutch, Gujarat. Thirty Nine patients presenting symptoms of Intermediate syndrome are examine broadly and incorporated in the study.

Inclusion criteria were: Patients with indications of intermediate syndrome reason owing to acute OP respiratory failure, extra ocular proceedings limitation and utilization time of OPC of more than 24 hours and less than 7 days.

Patient's whole history was composed. Entire clinical assessment was completed. Type of compound, amount of exposure, period of IMS, clinical characteristics of IMS are documented in detail. Regular blood examinations are completed. Serum cholinesterase levels two samples were taken and serum creatine kinase was completed for all patients. Clinical development was observed in stipulations of revival worsening of sickness and growth of any inferior hurdles. All patients incorporated under research will be managed with pralidoxime (P2AM) as per procedure, atropine as necessary and additional supportive measures were given. Mechanical ventilatory support was provided for patients in respiratory failure. Patients on ventilator support are evaluated for the period on ventilator and growth of ventilator associated pneumonia (VAP). Results of IMS were connected with form of complex, amount of exposure, period of IMS, serum cholinesterase levels and respiratory failure.

Statistical analysis

The data was coded and entered into Microsoft Excel spreadsheet. Analysis was done using SPSS version 15 (SPSS Inc. Chicago, IL, USA) Windows

software program. The variables were assessed for normality using the Kolmogorov-Smirnov test. Descriptive statistics were calculated.

Results

Thirty nine patients were incorporated in the study. Maximum number (37.5%) of patients was observed between 30-40 years. male dominance was observed in comparison to females. Sixty five percentages of cases were from agricultural sector while left over were unqualified laborers and others. Out of 39 patients who were exposed to OPC, 33 were improved and 06 were expired. Majority of cases 87.6% considered ingestion as the way of exposure of them 28 are recovered whereas left over 6 cases had inhalational exposure and all were improved. The difference between utilization and revival was not significant statistically ($p > 0.05$) (Table 1).

Amount of midway syndrome occurred owing to utilization of OPC of quantity ranging from 60-120 ml. Out of 39, 15 patients consumed >120 ml of OPC. Of them on treatment, 9 are improved and 6 were died and this difference between those were statistically significant ($p \leq 0.05$) (Table 2). In our study, methylparathion ($n=9$) was the recurrent compound connected with IMS. But this relationship was not significant statistically. Out of 39, 16 had respiratory failure and given ventilator support. Respiratory failure caused statistically significant number of mortality ($p \leq 0.05$). Of them 10 were in good health and 6 were died. Expanded ventilator support was connected with VAP. Association between VAP and outcome was not statistically significant ($p > 0.05$).

Table 1: Exposure of OPC and its outcome

	Frequency N=39	Recovery	Death
Route of exposure			
Ingestion	34	28	6
Inhalational	5	5	0
Intentional exposure			
Yes	35	29	6
No	4	4	0

Table 2: Quantum of exposure versus outcome

Quantity (ml)	Frequency (n=9)	Recovery	Death	Total
60-80	7	7	0	7
80-100	11	11	0	11
100-120	6	6	0	6
>120	15	9	6	15

Discussion

Current research was performed in 39 patients with midway syndrome subsequent acute organophosphate poisoning. All 39 cases were tracked up; results in terms of either revival or mortality were noted. All patients in the current research independent of ventilatory support was managed with elevated dose P2AM (>4gm/day). Highest numbers of cases were seen in the age group of 30-40 years. Comparable study was done by Goel et al. [8]. Males are further affected than the females. It may be due to males at present age group experienced additional pressure towards their learning, anxiety in jobs, arrangement, and the majority of them are not capable to manage emotional divergence and stress of hard circumstances. Analogous findings was also made by Kanagaraj et al. in his study [9].

Majority of the cases were from agricultural sector while residual were unqualified manual workers and others. This observations were in harmony with the study of Kanagaraj et al. [9]. In Rural areas, admittance to health care providers is negligible as well as alertness about precautionary actions during management of pesticides are missing among the populace. Out of 39 patients incorporated for study, greater part of the cases considered for ingestion as the way of contact to toxic OP compound. 5 patients had inhalational exposure. On treatment and follow up, all 5 patients in inhalational group enhanced while in the other group 6 deaths accounted. Parallel observation were done by Goel et al. [8]. in present research, amount of transitional syndrome raised due to utilization of OPC of quantity ranging from 60-120 ml. All 6 patients who expired subsequent intermediate syndrome had consumed >120 ml. From this it can be contingent that consuming a superior amount of OPC leads extensively to death. parallel results were too made by Wadia et al. [10].

Mainly observed clinical characteristic was proximal muscle weakness next neck muscle weakness. Wadia et al and Shaileesh et al in their surveillance also had similar findings [11]. Among all, 16 patients had respiratory failure. All 16 patients' requisite mechanical ventilator support. Of them, 50% was on ventilator support for more than 9 days and out of these 5 patients died. Likewise, in mainstream studies, death in IMS is accredited owing to respiratory failure [10,11]. In this study, out of 16 patients on mechanical ventilation, 9 patients who were on ventilator for further than 4 days developed VAP. Alike observations were also observed in research of Kanagaraj et al. [9].

Conclusion

The occurrence of IMS in organophosphorus poisoning should be recognized in premature stages and cautious management, monitoring and follow up of affected patients are desirable to decrease the demises. Death arises owing to respiratory paralysis can be reduce by premature recognition of IMS and by providing quick ventilator support.

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