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Original Article

EVALUATION OF PATIENTS WITH ORGANOPHOSPHORUS POISONING AT A TERTIARY CARE HOSPITAL OF SINDH

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ABSTRACT:

Objective: To evaluate the modes of presentation of patients with organophosphorus poisoning at tertiary care hospital of Sindh.
Patients and Method: The descriptive study was conducted at medical unit of Liaquat University Hospital Hyderabad/Jamshoro from Jan 2009 to May 2011 inpatients with Organophosphorus poisoning. 200 patients were enrolled for evaluation of presentation, clinical course and outcome. For statistical analysis SPSS 11 was used.
Results: During the period of study 200 patients were admitted at LUMHS Hospital with the diagnosis of Organophosphorus poisoning. Their age ranged 20-65 years with mean age of 38.4±3.5 years and median age was 45 years. Males were 162 (81%) and females were 38 (19%). Organophosphate ingestion was most common mode of poisoning and was noted in 110 (55%). Among the clinical features the meiosis, hyper salivation, wheezing and drowsiness were present in all (100%) of the patients. Other modes of presentation were chest crepitations 122 (61%), hypotension 144 (72%), lacrimation 182 (91%), vomiting 124 (62%), diarrhea 102 (51%), abdominal pain 138 (69%), cyanosis 68 (34%), bradycardia 118 (59%), Fasciculations 82 (41%). Mechanical ventilator was required in 57 (28.5%) patients with inotropic support. Average duration of hospital stay was 6.3 days ±SD 4.2 (range 2-26) days. Out of 200 patients 39 (19.5%) patients died and 161 (80.5%) survived.
Conclusion: This study concluded that organophosphate poisoning especially with suicidal tendency is not an uncommon entity with high mortality rate in our part of the world.

Key Words: Organophosphorus; Poisoning, Emergency Medicine, suicidal tendency

INTRODUCTION

Organophosphorus poisoning (OPP) is not an uncommon, rapidly developing, and potentially fatal clinical entity. Organophosphate compounds (OPC) have become quite popular for agricultural, industrial and domestic use and represent an important potential health risk[1]. The OPC are most commonly associated with serious human toxicity, accounting for more than 80% of pesticide-related hospitalizations[2]. Organophosphorus pesticides are used widely for different purposes. Despite the apparent benefits of these uses acute OPP is an increasing worldwide problem, particularly in rural areas. Organophosphorus pesticides are the most important cause of severe toxicity and death from acute poisoning worldwide, with more than 200?000 deaths each year in developing countries. Although the incidence of severe acute OPP is much less in developed countries, many patients with acute low dose unintentional or occupational exposures also present to health authorities[3]. Due to importance of widespread use of pesticidesin agriculture, intoxication due to OPP is common in Turkey. Organophosphorus compounds may cause late-onset distal polyneuropathy occurring two or more weeks after the acute exposure[4].High doses of OPP can cause severe liver injury with raised liver enzymes[5]. Considering the importance of OPP we decided to conduct this study. The purpose of conducting this study is to evaluate the modes of presentation of OPP patients so that the knowledge of presentation, clinical course and outcome may be utilized to improve the patient care.

PATIENTS AND METHODS

This descriptive and cross sectional study was conducted at medical unit of Liaquat University Hospital Hyderabad/Jamshoro from Jan 2009 to May 2011. 200 patients presented in the emergency department, with clinical features of OPP were admitted. Patients were selected randomly. The inclusion criteria of the study were; history from parents about ingestion of organophophate poison and clinical signs like excessive salivation, meiosis, bradycardia and wheezing. While the exclusion criteria were patients with absence of meiosis, patients who expire in emergency department. The proforma was filled by asking history from patients and their family members with details of jobs and socioeconomic condition. Data about mode of presentation and clinical findings was recorded. The data was analyzed in SPSS version 11.

RESULTS

During the period of study 200 patients were admitted at LUMHS Hospital with the diagnosis of Organophosphorus poisoning. Their age ranged 20-65 years with mean age of 38.4±3.5 years and median age was 45 years. Males were 162 (81%) and females were 38 (19%). Table I

Organophosphate ingestion was most common mode of poisoning and was noted in 110 (55%), inhalation and dermal absorption 90 (45%) were less common. Table II

Among the clinical features the meiosis, hyper salivation, wheezing and drowsiness were present in all (100%) of the patients.Other modes of presentation were chest crepitations 122 (61%), hypotension 144 (72%), lacrimation 182 (91%), vomiting 124 (62%), diarrhea 102 (51%), abdominal pain 138 (69%), cyanosis 68 (34%), bradycardia 118 (59%), Fasciculations 82 (41%), prolonged QTc 42 (21%), and ST changes 54 (27%). Table III

Muscle tone was decreased in 110 (55%), increased in 56 (28%), reflexes were exaggerated in 54 (26%) and depressed in 129 (64.5%). Septicemia was seen in 18 (9%) patients, seizures in 9 (4.5%) patients. Pulmonary edema was observed in 52 (26%) patients, respiratory distress was seen in 70 (35%), ARDS in 37 (18.5%) patients. Out of 200 patients 40 (20%) were of mild severity, 82 (41%) were of moderate severity, and 78 (39%) were of severe grade.Mechanical ventilator was required in 57 (28.5%) patients with inotropic support. Average duration of hospital stay was 6.3 days ±SD 4.2 (range 2-26) days. Out of 200 patients 39 (19.5%) patients died and 161 (80.5%) survived.

DISCUSSION

Organophosphate compounds (OPC) are used extensively around the world as pesticide in agriculture, thousands of these compounds have been screened and over onehundred of them have been marketed for these purposes[6]. They are not uncommonly used as suicidal in rural areas which kill an estimated 200,000 people every year; many people are affected by accidental poisoning. Most common mode of presentation is neurological symptoms. Neurologic effects have been reported in most type of pesticides, including organophosphate, organochlorine, carbamate, herbicides, fungicides, fumigants and pyrethroid insecticides[7].Effects of organophosphate poisoning(OPP) may be classified into secondary to muscarinic, nicotinic, and central nervous systemreceptor over-stimulation. Muscarinic over- stimulation

Table III

Mode of Presentation	Number	Percentage%
chest crepitation	122	61
Hypotension	144	72
Lacrimation	182	91
Vomiting	124	62
Diarrhea	102	51
abdominal pain	138	69
Cyanosis	68	34
Bradycardia	118	59
Fasciculations	82	41
prolonged QTc	42	21
ST changes	54	27

TABLE 1

GENDER DISTRIBUTION

SEX	Number	Percentage%
Male	162	81
Female	38	19
Total	200	100

Table II

Etiology	Number	Percentage%
Organophosphate ingestion	110	55
Inhalation & dermal absorption	90	45
Total	200	100

ismanifested as hyperactivity of the parasympathetic system, including miosis, bradycardia, lacrimation and bronchial secretion. Nicotinic effects include musclefasciculations, cramping, and weakness while respiratorydepression, seizures, and unconsciousness are theconsequence of central nervous system effects.

In our study we evaluated the cross sectional data on neurological and peripheralfindings from 200 patients, both males n=162and females n =38.The mean age of our patients was 38.4±3.5 years. In our study 110 (55%) patients presented as suicidal. 78 (39%) patients presented in critical state.All patients presented with specific features of meiosis, hyper salivation, wheezing and drowsiness.Most of the patients presented with bradycardia, low blood pressure and decreased respiratory rate.In a different study meiosis, depressed mental status, bronchospasm and excessive salivation was present in all the patients. 18 patients received mechanical ventilation of which 10 died, 8 survived with mortality rate above 50 % of ventilated patients[8]. Mortality rate in our study was 39 (19.5%). One study carried out in India supported our results that oral ingestion (98%) was found to be the most common route of poisoning and the most frequent reason for poisoning was attempted suicide (98%).The total mortality rate of the study population was found to be 25%[9]. While in our study attempted suicide was 55% and total mortality was 19.5%, prolonged QTc interval was present in 42 (21%) patients, and ST-T changes were presentin 54 (27%) patients. Various studies have reported ECG changes as prolonged QTc interval, ST segment elevation, low amplitude T waves, extrasystole and prolonged PR interval[10].Organophosphorus compounds have become increasingly popular for agricultural, industrial and home use and represent a significant potential health risk. Prompt recognition and aggressive treatment of acute intoxication areessential in order to minimize the morbidity and mortality from these potentially lethalcompounds. Chronic exposure may lead to most important clinical manifestations headache, watering in eyes, and burning sensation in eye/face, probably be the consequence of chronic effects of OPC on the central nervous system. The delayed toxicity due to organophosphate compounds is possible and has been termed as organophosphate induced delayed neuropathy, and manifested chiefly by weakness or paralysis and paraesthesia of the extremities.

CONCLUSION

It was concluded that organophosphate poisoning especially with suicidal tendency is not an uncommon entity with high mortality rate in our part of the world.

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