CLINICAL PATTERN AND OUTCOME OF ORGANOPHOSPHORUS COMPOUND POISONING

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ABSTRACT

BACKGROUND

Organophosphate insecticides/pesticides are used widely throughout the world. The organophosphorus poisoning is a very serious condition that needs rapid treatment. Emergent and appropriate management is always desirable to prevent the serious complications and high mortality. In this study, we determine the clinical presentation and outcome of organophosphorus poisoning in our institute.

MATERIAL AND METHODS

This study carried out in Medicine Department, SIMS, Shimoga, from January 1st, 2016 to April 20th 2016. A total of 100 cases of OP poisoning were studied. We included all patients of organophosphate poisoning presented either with signs of muscarinic involvement or signs of nicotinic involvement. Outcome measured according to W.H.O. classification of severity.

RESULT

Out of a total 100 patients of organophosphate poisoning were admitted, among these 44% were males and 56% females. Average age was 28.9±8.8 years. Nausea and vomiting was the most common clinical feature found in 93% of the patients followed by salivation seen in 91% and Miosis in 87%. According to W.H.O. Classification for Severity of Organophosphate poisoning. Mild 46%, 37% cases were moderate and 17% were severe. Overall mortality rate was 19%.

CONCLUSION

Present study shows the importance of WHO staging of severity of organophosphorus compound poisoning as mortality increases with severity. Study also showed that delayed arrival, lack of ICU facility and lack of preliminary management at the early stage are the causes of increased mortality in OP compound poisoning. OP compound poisoning needs rapid diagnosis, early and effective treatment to decrease the severity and mortality. These finding shows need for improvement in primary health care facility to decrease morbidity and mortality.

KEYWORDS

Organophosphorus Compounds, Young Adults, WHO Staging, Primary Health Care.

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INTRODUCTION

Organophosphate insecticides/pesticides are used widely throughout the world.[1] Organophosphates from occupational, accidental and intentional exposures are a global health problem, especially in developing countries.

According to WHO, two million people attempt suicide and one million accidental poisoning cases occur each year worldwide.[2,3] Organophosphates are the most common mode of poisoning in Asia, being both widespread and resulting in high mortality rate.[1,4] In several areas, some pesticides have become the trendiest method of suicide, gaining unsavoury reputation among health care personnel and community.[4]

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They are chemical agents used widely throughout the world, especially in agriculture and also a nerve agent in war fares.[5] The exact prevalence of organophosphate poisoning is unknown in India, as many cases are not informed due to religious, social or cultural reasons.

However, reported incidence of Deliberate Self-Poisoning (DSP) in India is about 5-6 per 100,000 in men and women. Benzodiazepines and organophosphate compounds are commonly used for DSP.[6]

The mode of exposure to organophosphates varies including dermal, gastrointestinal and inhalational routes. Symptoms are muscle weakness, muscle fasciculation, cramps, twitching and even sometimes the patient may need ventilatory support due to weakness of respiratory muscles. (Acute cholinergic crisis).[7,8,9] Intermediate syndrome and organophosphorus induced delayed neuropathy (COPIND).[10] are other common complication. The organophosphorus poisoning is a very serious condition that needs rapid treatment. Emergent and appropriate management is always desirable to prevent the serious complications and high mortality.

In this study, we determine the clinical presentation and outcome of organophosphorus poisoning.

METHODOLOGY

Study is conducted on 100 consecutive patients admitted in various medical wards of the McGann Hospital attached to Shimoga Institute of Medical Sciences, Shimoga. From January 1st, 2016 to April 20th, 2016, we included all patients of organophosphate poisoning presented either with signs of muscarinic involvement or signs of nicotinic involvement; cases presented with combined signs of both muscarinic and nicotinic involvement were also included. However, we excluded those patients in whom organophosphorus poisoning was doubtful and patients who were intoxicated with organophosphorus mimickers, for example nicotine poisoning, opioid poisoning, mushroom poisoning, gastroenteritis or patients who were diagnosed or suspected of having CNS disease such as parkinsonism and myasthenia. Outcome measured according to W.H.O. classification of severity.

WHO Classification for Severity Signs/Symptoms

Mild	Moderate	Severe
Anorexia, Headache, Dizziness, Weakness, Anxiety, Tremors of the tongue and the eye lids, Miosis, Impairment of vision	Nausea, Salivation, Lacrimation, Abdominal Cramp, Vomiting, Sweating, Slow pulse, Muscular tremors	Diarrhoea, Pinpoint pupils and non-reactive pupils, Respiratory difficulty, Pulmonary oedema, Cyanosis, Loss of sphincter control, Convulsions, Heart block, Coma

Data Analysis

After taking informed consent, exact mode of poisoning was ascertained and detailed clinical examination was done. Statistical analysis was performed. Descriptive statistics (Frequency and percentage) were computed for categorical variable like sex, age group, clinical presentation and outcome.

RESULTS

100 patients of organophosphate poisoning were admitted. Among these, 44% were males and 56% females.

Sex	No. of Patients	Percentage
Male	44	44
Female	56	56
Table 1: Showing Sex Distribution		

The male-to-female ratio is 1:1.12.

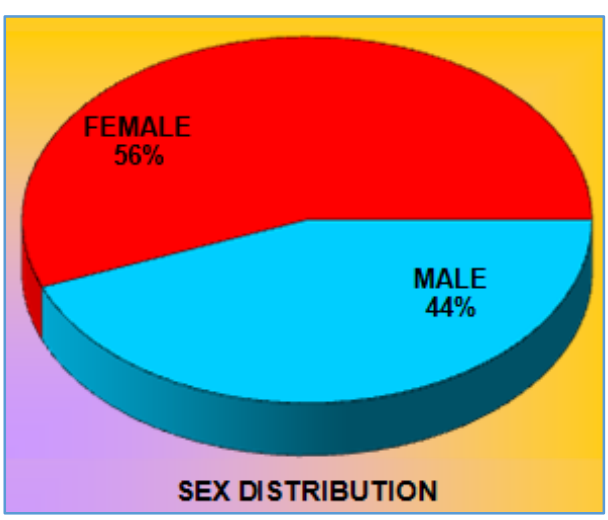

Chart 1: Showing Sex Distribution

Age Group	No. of Patients	Percentage
11-20	10	10
21-30	33	33
31-40	27	27
41-50	15	15
51-60	12	12
Above 60	3	3
Table 2: Showing Age Distribution		

Average age was 28.9±8.8 years. The majority of these patients belong to the age group of 21-30 years. The highest number of cases (33%) was from the age group of 21 to 30 years.

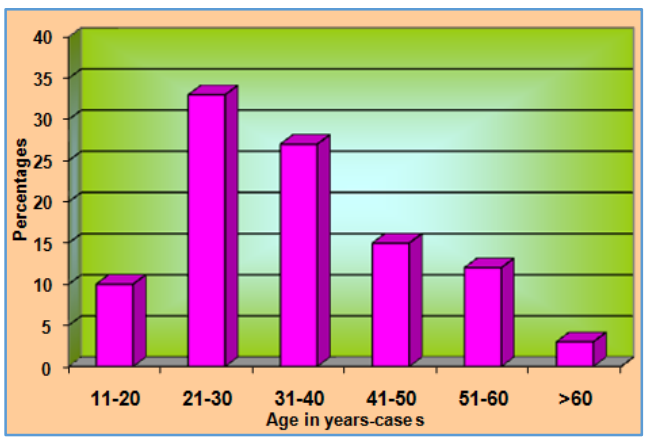

Chart 2: Showing Age Distribution

Various clinical presentation of acute organophosphate poisoning are presented (Table 3).

Clinical Features	No. of Patients	Percentage
Pulse Rate		
45-65	23	23
66-75	50	50
>75	27	27
Cardiac Manifestation		
Qt Interval Normal	78	78
Qt Interval Prolonged	28	28
Miosis	87	87
Bronchospasm	72	72
Anxiety and Restlessness	88	88
Fatigue	50	50
Salivation	91	91
Lacrimation	44	44
Nausea and vomiting	93	93
Sweating	55	55
Fits	11	11
Muscle weakness	19	19
Cranial palsies	4	4
Respiratory distress	26	26
Coma	7	7
Intermediate syndrome	9	9
Table 3: Showing Clinical Presentations		

Nausea and vomiting was the most common clinical feature found in 93% of the patients followed by Salivation seen in 91% and Miosis in 87%.

W.H.O Grading	Total (%)	Discharged	Expired (% of Death)
Mild	46 (46)	44	2 (4)
Moderate	37 (37)	28	9 (24)
Severe	17 (17)	9	8 (53)
Total	**100 (100)**	**81**	**19 (19)**

Table 4: Outcome of Patients According to W.H.O Classification (n=100)

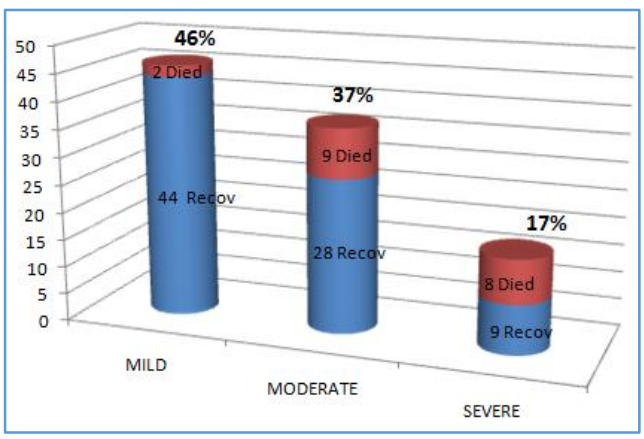

Chart 3: Outcome of Patients According to W.H.O Classification

According to W.H.O. Classification for Severity of Organophosphate poisoning. Mild 46%, 37% cases were moderate and 17% were severe. Among those with severe grade, 66% patients belonged to the age group of 16-30 years. Before presenting to tertiary care facility, only 7% of all patients received specific emergency treatment at primary health care facility, 68% patients received non-specific emergency treatment, while 25% did not receive any treatment. Among those who received specific treatment, 7 patients recovered and 2 patients expired. Among those who received emergency but non-specific treatment, 58 patients survived and 5 expired. For those who did not receive any treatment, 8 patients expired and only 17 recovered.

Overall mortality rate was 19%. Out of 19% patients, 9 (47%) were males and 10 (53%) were females. According to W.H.O classification for severity, among 17 patients who presented with severe symptoms 9 patients were discharged to home and 8 expired. For those 37 patients with moderate symptoms 28 recovered, while 9 patients expired. Those with mild symptoms 44 recovered, 2 died.

DISCUSSION

Organophosphorus compounds are used globally for pest control over 100 years. These are common agents for suicide and accidental poisoning due to its easy availability.[10] In agricultural countries like India, toxicity of pesticide as well as lack of medical services causing high increase morbidity and mortality.

The data derived from the study clearly showed that organophosphorus poisoning was common in females (56 were females and 44 were males). This female preponderance is sharp contrast to the study done by many international studies.[10,11,12] However, it is in correlation with study done by Paudyl BP.[13] who showed that females attempted suicides more than males. Only common in this locality, but also seen in some others parts.

In this study, suicidal mode of poisoning was common. Majority of the cases were young people from the age group 21-40 years about 60%; this is comparable to other studies as done by Singh D et al,[14] in which maximum number of patients were between 15-35 years of age. This finding is also supported by study of Singh S et al[15] and Singh S Wig N et al.[16]

Most frequent signs noted in the study were nausea and vomiting in 93% followed by Salivation 91% and Miosis 87%, other frequent clinical features noted in this study are also comparable with other studies likes Tahir MH et al[11] and Karki P et al.[17]

In this study, it also became evident that out of 19 patients who expired 8 patients received no therapy before coming to the hospital and arrived late, also supported by study done by Suliman MI et al.[1] Mortality rate was 20% similar to study done by Numidasa UA et al.[18] However, 5% mortality higher than the study by Paudyal BP.[13] was observed in our study which may be due to lack of ICU facilities, late arrival, not receiving any treatment at periphery before arrival to the hospital, poverty and less education.

CONCLUSION

Present study shows the importance of WHO staging of severity of Organophosphorus compound poisoning, as the mortality increases with severity. Study also showed that delayed arrival, lack of ICU facility and lack of preliminary management at the early stage are the causes of increased mortality in OP compound poisoning. OP compound poisoning needs rapid diagnosis, early and effective treatment to decrease the severity and mortality. These findings show the need for improvement in primary health care facility to decrease morbidity and mortality of Organophosphorus compound poisoning.

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