Original Research Article

Organophosphorus poisoning: A clinical study

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Abstract

Organophosphorus poisoning is very common toxicological emergency encountered in rural india. Organophosphorus compounds (OPC) are commonly used by agricultural population in India. We conducted a retrospective study of 90 patients which were admitted in our ICCU for OP poisoning during period of June 2017 to December 2017. Most of the patients were between the age group of 20-40 years (54.45%) while 13.33% were < 20 years and 32.22% were > 40 years. Male were 77.78% while 22.22% of the patients were females. 77.78% of the patients were from the rural area while 22.22% were from urban area. Rogor (45.55%) was the most common compound consumed. Motality rate was 13.33% in this study. Most common cause of death was respiratory failure.

Key Words: Organophosphorus poison, respiratory failure.

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INTRODUCTION

Organophosphorus compounds are widely used as pesticides in our country. Organophosphorus poisoning can result from occupational, accidental or intentional exposure. Clinical manifestations include cholinergic syndromes, CNS symptoms and cardiovascular symptoms. Organophosphates inhibits the enzyme acetyl choline esterase. This results in accumulation of acetyl choline at synaptic junction. This excess acetyl choline is responsible for muscarinic and nicotinic effects in body. Human gastric mucosa is permeable to organophosphates and is classical way of absorption in suicidal cases. Liver is the organ where activation and detoxification of OP compounds takes place. They are eliminated through kidneys. Initial management of patients is decontamination and cardiorespiratory stabilization. Atropine and pralidoxime are mainstays of treatment. So OPC are easily implicated in suicidal and accidental poisoning. The special emphasis in this study was given on age, sex, motive of poisoning, type of compound, place and outcome. Respiratory failure is important complication responsible for death in many patients. So timely intervention is very crucial.

MATERIALS AND METHODS

Retrospective observational study was carried out at tertiary care hospital. Total 90 cases of OP poisoning were studied (n=90).

Inclusion Criteria: cases of acute OPP aged > 12 years

Exclusion Criteria: Pregnant women, non OP compound poisoning cases, brought dead cases. All the data was collected in detailed proforma with history taken either from patient or relatives as condition permitted. Detail clinical examination and necessary investigations were performed including serum choline esterase. All the data was analysed, documented and interpretated as per laid down protocol. Statistical significance was set as P value 0.05 and results were analysed using statistical package of social sciences (SPSS) version 16.0

OBSERVETIONS

Table 1: Age wise distribution

Age (years)	No (n==90)	Percentage
< 20	12	13.33
21-40	49	54.45
>40	29	32.22

This table shows that the most of the patients were between the age group of 21-40 years (54.45%), 13.33% were < 20 years and 32.22% were > 40 years.

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Table 2: Sex wise distribution

Sex	No (n=90)	Percentage
Male	70	77.78
Female	20	22.22

This table shows that majority of the patients were male (77.78%) while 22.22% of the patients were female.

Table 3: Distribution of patients according to intention to take poison

Mode of poisoning	No (n=90)	Percentage
Suicidal	68	75.56
Accidental	18	20.00
Homicidal	4	4.44

The commonest intention was suicidal (75.56%) followed by accidental (20%) and homicidal (4.44%)

Table 4: Patient Distribution according to poison taken

Type of poison	No (n==90)	Percentage
Rogor	41	45.55
Diazinon	20	22.21
Malathion	11	12.22
Fenitrothin	8	8.32
Unknown	10	10.40

Rogor (45.55%) was the most common compound consumed followed by Diazinon (22.21%) and malathion (12.22%)

Table 5: Distribution of patients according to Residence

Residence	No (n==90)	Percentage
Rural	70	77.78
Urban	20	22.22

77.78% of the patients were from the rural area while 22.22% were from urban area.

Table 6: Prognosis of patients

Prognosis	No (n=90)	Percentage
Survived	78	86.67
Dead	12	13.33

Motality rate was 13.33% in this study.

DISCUSSION

Organophosphorus poisoning is very common in rural india. In this study also most of our patients were from rural part of district. Most of the patients were in age group of 21-40 years (54.45%). The reason is because this is main working age group and bear the responsibility of their families. Present study shows male dominance (77.78%) in OP poisoning. This may be because males are more involved in spraying crops in farms. Most common intention for poisoning was suicidal in this study. It was 75.56%. Risk factors for suicidal poisoning are social and domestic problems, alcohol abuse, financial stress, chronic illness and failures in life. The common social issues for poisoning are financial problems and job problems. Rogor (45.55%) was the most common OP compound found in poisoning in this study. This may be because it is easily available in farms. Maximum cases i.e. 77.78% occurred in rural areas as OPC are mostly used by farmers residing in rural areas while most of the cases in urban areas occurred accidently in children or intentionly in adults. It also suggests necessity of thorough education and training of farmers to prevent accidental exposure to OPC while spraying in farms. Motality rate was 13.33% in this study. Mortality is mostly related to delayed presentation of patients to our hospital, type of compound, higher amount of poison consumed and associated comorbidities.

CONCLUSION

OP poisoning is most common in rural population, with male predominance belonging to lower socioeconomic strata. Education among the agricultural workers and youth about harmful effects of OPC and ways of prevention is necessary. Upgradation of primary health care facilities among rural areas is important step in management of such cases, which will help to reduce morbidity and mortality due to OPC poisoning. Strict implimentation of pesticide act and reducing use of OPC to minimum possible level will also help.

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