

Evaluation of Autopsy Study of Organo Phosphorus Poisoning in Patients

Md. Jasim Uddin¹, Md. Shafi Mohaimen², Md. Iqbal Bahar Chowdhury³, Md. Nazir Hossain⁴, Rakibul Hasan Khan⁵, Md. Mashioor Rahman Rikabder⁶, Afroza Akter⁷

¹Assistant Professor, Department Of Forensic Medicine, Ashiyan Medical College, Dhaka, Bangladesh

²Assistant Professor, Dept. of Forensic Medicine, Shaheed Tajuddin Ahmad Medical College, Gazipur, Bangladesh

³Assistant Professor, Department Of Forensic Medicine, Shaheed Monsur Ali Medical College, Dhaka, Bangladesh

⁴Assistant Professor, Department Of Forensic Medicine, Dhaka National Medical College, Dhaka, Bangladesh

⁵Lecturer, Department Of Forensic Medicine, Sheikh Hasina medical college, Tangail, Bangladesh

⁶Assistant Professor, Department Of Forensic Medicine, Jahurul Islam Medical College, Kishoreganj, Bangladesh

⁷General Practitioner, Hazi Md. Alfaj Uddin Diagnostic Centre, Kanchan, Rupgonj, Narayanganj, Bangladesh

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*Corresponding Author: Md. Jasim Uddin

Abstract

Introduction: Organophosphates (OP) are used as insecticides in agricultural and domestic settings throughout the world. The mechanism of action is through the inhibition of the enzyme acetyl cholinesterase, leading to the accumulation of acetylcholine at cholinergic synapses. On a worldwide basis, pesticides are responsible for hundreds and thousands of cases of acute poisoning and many thousands of deaths each year. **Objective:** To evaluation of autopsy study of organo phosphorus poisoning in patients. **Method:** This retrospective type of study was conducted among 75 patients who fulfilled criteria from Forensic Medicine Dept. Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh from July-2015 to July-2017. **Results:** During the study, 58% patients were male, which was 16% higher than female. 52.11% worked as an agriculture area/ farmer. Also, 76% people used organo phosphorus for suicide and 24% people used it accidentally. **Conclusion:** From our study we can conclude that, organophosphorus is a self-poisoning important clinical problem in developing world. Because of limited guide therapy, properly study is needed for seeking treatment which could help to reduce mortality and morbidity.

Keywords: Organo Phosphorus, Insecticides, Agricultural Area.

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INTRODUCTION

Organophosphates (OP) are used as insecticides in agricultural and domestic settings throughout the world. The mechanism of action is through the inhibition of the enzyme acetyl cholinesterase, leading to the accumulation of acetylcholine at cholinergic synapses. On a worldwide basis, pesticides are responsible for hundreds and thousands of cases of acute poisoning and many thousands of deaths each year. Vast majority of these deaths are result of suicidal consumption of organo phosphorous compounds. The excess acetylcholine causes constant acetylcholine receptor triggering, resulting in malfunction of the autonomic, somatic and central nervous systems. Clinical manifestations of OP poisoning lead to acute cholinergic crisis [1]. Although parasympathetic overstimulation tends to predominate, the overstimulation causes a clinically indistinguishable

pattern of symptoms which, however, tend to be milder and of shorter duration [2]. Their common availability renders OP insecticide poisoning a worldwide health problem affecting millions of patients. With a high fatality rate [3, 4]. The majority of these poisonings appear to be an act of self-harm. Thousands die each year, especially in the Asian Pacific region, where pesticide poisoning is the most frequent cause of fatal self-poisoning [4]. In this study our main goal is evaluation of autopsy study of organo phosphorus poisoning in patients.

METHODOLOGY

A Retrospective study was carried out at Dept. of Forensic Medicine, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh from July-2015 to July-2017. 75 patients included in the study who were fulfilled criteria.

Study Procedure

Face to face interview of the participants were conducted with the semi-structured, pre-tested questionnaire. The interview was conducted anonymously and privately as much as possible. Before preceding the data collection, the detail of the study was explicitly explained to each eligible respondent and informed written consents from the respondents were obtained.

Data Analysis

Data were entered in the template of Statistical program, SPSS-16 after necessary editing and coding. Descriptive statistics were generated for socio-demographic variables and were presented with relative

frequency. For assessing the complications and health seeking pattern relevant data were analyzed along with the descriptive statistics. Cross tabulation of the selected complication and key health seeking practice variables were done to explore the association through chi square test at a significance level of $P < 0.05$.

RESULTS

In table-1 shows age distribution of OPC poisoning cases where most of the patients belong to 21-30 years age group, 39.44%. In figure-2 shows distribution of OPC poisoning cases according to the gender where 58% patients were male, which was 16% higher than female.

Table-1: Age distribution of OPC Poisoning Cases.

Age group in years	No of victims	Percentage
<10years	5	7.04%
(21 - 30) years	28	39.44%
(31-40) years	23	32.39%
(41 - 50) years	10	14.08%
>50 years	5	7.04%
Total=	71 cases	100%

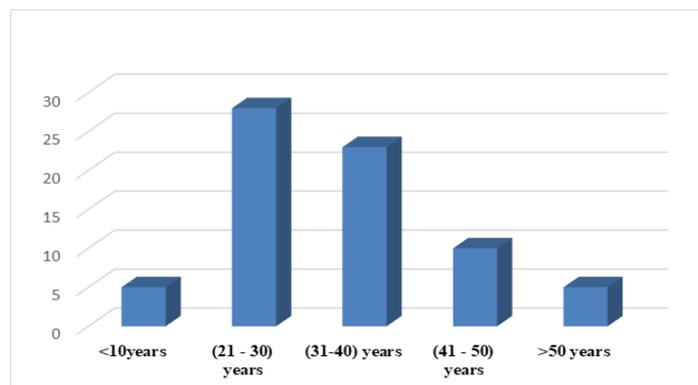


Fig-1: Age distribution of OPC Poisoning Cases.

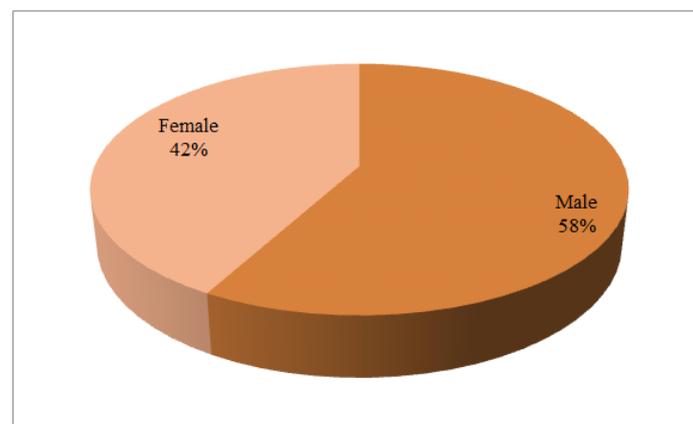


Fig-2: Distribution of OPC poisoning cases according to the gender.

In table-2 shows distribution of OPC Poisoning cases by professions. 52.11% worked as a agriculture area/ farmers.

Table-2: Distribution of OPC Poisoning cases by professions.

Profession	No of Victim	Percentage
Agriculture working / Farmers	37	52.11%
House wife	29	40.85%
Others	5	7.04%
Total=	71	100%

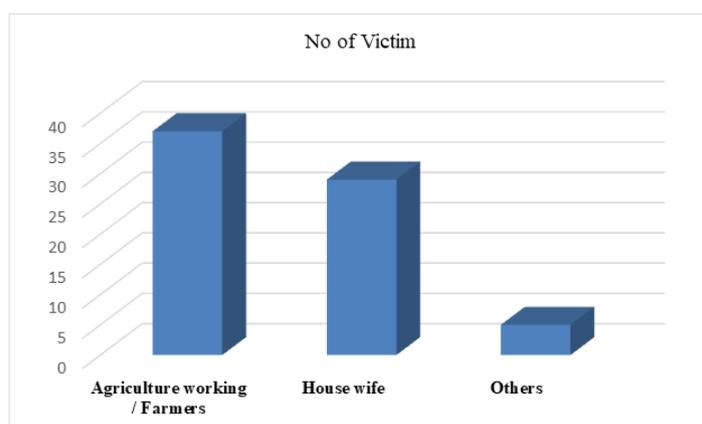


Fig-3: Distribution of OPC Poisoning cases by professions.

In figure-4 shows distribution of the patients according to purpose of organophosphates where 76%

people used it for suicide and 24% people used it accidentally.

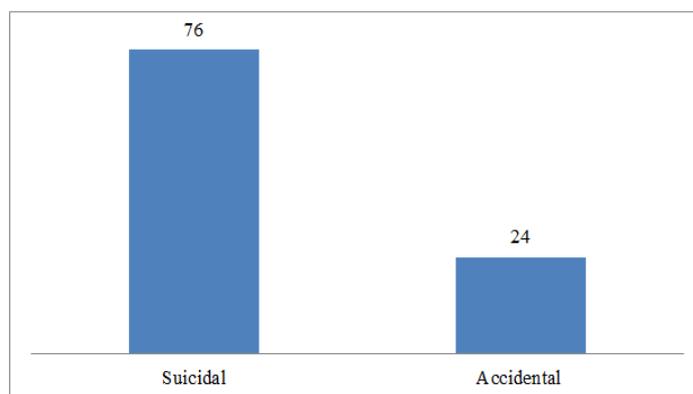


Fig-4: Distribution of the patients according to purpose of organophosphates.

DISCUSSION

In a study of India, suicide rate was found In China and South-East Asia pesticides account for about 300000 suicides each year [5]. Another study suggested that each year worldwide there is 3 million acute poisoning with 220000 deaths [6]. In Bangladesh poisoning is an important health problem causing around 2000 deaths per year.¹² Self-poisoning constitutes more than half of the total poisoning cases admitted in hospital.¹³ Most of the poisoning cases may have some reasons for taking poison. Which is quite similar to our study where 76% people used it for suicide and 24% people used it accidentally. OPC poisoning in a country like Bangladesh is not only a

public health problem but also related to economics and culture. There is great need to enhance stress on prevention of poisoning. A coordinated and comprehensive response is needed to make any impact. In our study most of the cases belonged to the age group of 21-30 years which is similar to the one study [7]. In a country like India this is the age group where the youth have to shoulder the responsibilities of the family. However, some cannot cope with this burden and hence this age group contributes for maximum deaths due to poisoning. In our study, males and females comprised 58% and 42% of the cases respectively; male patients were 16% higher than female. This male predominance was also seen the one

report [8]. Another report from India in 1993–1994 analyzed 559 cases of poisoning and aluminium phosphide was found to be the most common poison. The scenario was not different from these reports and agrochemicals continue to be the most common agents responsible for suicidal and/or accidental poisoning [9]. According to National Crime Records Bureau India, every 5 minutes one person commits suicide and 7 attempts to kill themselves, forming about 100000 deaths per year [10] highest in the state of Kerala [11]. Majority of the victims belonged to the group 14–34 years and OPC was the most common agent used for suicidal purpose [12]. In Sri Lanka, many of hospital admissions each year are for agrochemical poisoning with over a thousand deaths annually. Of these, about three-quarters are self-administered, and the rest are occupational and accidental [13]. In Sri Lanka another study showed that incidence of suicide due to poisoning was more than 80%, followed by hanging which constituted 10.7% [14]. However, changing use from the most toxic pesticides to less toxic pesticides has had a remarkable effect in Sri Lanka and the suicide rate has fallen by 50% over ten years since such legislation was passed [15, 16]. In USA, during 1980, out of total fatalities 49.7% were suicides and 39.5% were accidental by agrochemical poisoning [17].

CONCLUSION

From our study we can conclude that, organophosphorus is a self-poisoning important clinical problem in developing world. Because of limited guide therapy, properly study is needed for seeking treatment which could help to reduce mortality and morbidity.

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