CLINICAL PROFILE AND OUTCOME IN PATIENTS WITH ORGANOPHOSPHOROUS POISIONING

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ABSTRACT

INTRODUCTION

Organophosphorous poisoning (OP) is a prevalent emergency care problem found in Nepal.Nepal being agricultural country and pesticide being easily available, organophorous poisoning is most common cause of poison related morbidity and mortality in Nepal. The main objective of the study was to evaluate the clinical profile and outcome of patients on the basis of demographic profile, type of compound, presenting symptoms and outcome.

MATERIAL AND METHODS

Our study included 80 patients with organophosphorous ingestion, admitted in ICU and medical ward of Universal College of Medical Sciences Teaching Hospital (UCMS-TH), Bhairahawa, Rupendehi, Nepal from1 July, 2019 to 30 July 2020. Ethical clearance was obtained along with consent from patient. Data was collected from patient's visitor.

RESULTS

Females (63%) were more common than males (37%). Age group 21-30 years was most likely to ingest OP compound for suicidal attempts. Chlorpyriphos (80%) was most common compound ingested. Forty one percentage cases consumed alcohol, 10% cases were smokers, 11% cases had diabetes and 22% cases had hypertension.Vomiting (90% cases) was most common symptom; 54% cases had hospital stay of less than 5 days and 43% cases had hospital stay of 5-10 days. Based on POP scoring, 24 cases of moderate severity; one case died where as three cases out of eight severe cases died; 74% had uneventful recovery, 11% developed intermediate symptoms, 10% needed ventillatory support and 5% died due to poisoning.

CONCLUSION

Organophosphorous poisoning was predominantly seen in young female population. Strict policies against the free availability and sale of insecticides is required to control organophosphorus poisoning.

KEYWORDS
Organophosphorus, Poisoning, Suicide.

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INTRODUCTION

Organophosphate pesticide poisoning is a prevalent emergency care problem found in Nepal. Since Nepal is primarily an agricultural country and organophosphate pesticides are prevalent throughout the region, poisoning is a much more common problem here as a low and middle income country (LMIC) compared to more developed countries such as the United States. Worldwide, there are approximately three million cases per year of organophosphate poisoning, with mortality ranging from 6 to 30% in LMIC.[1] World Health Organization (WHO) report shows that Nepal ranks 7th in overall suicide globally, but is the 3rd highest country in suicide for women and the 17th highest for men.[2]

Suicide has now become the number one cause of unnatural death in Nepal. Data suggests 5,317 people committed suicide in the fiscal year 2017-2018. It has been reported that there are nearly 15 suicides in Nepal each day according to Nepalese police.[3] Organophosphorus poisoning is a common mode of suicidal attempts leading to morbidity and mortality of almost 6% every year. Strict policies against the free availability and sale of insecticides is required to control organophosphorus poisoning.[4] Various isolated hospital-based studies also clearly demonstrate that OP compounds occupy the greatest burden of poisoning related morbidity and mortality in Nepal.[5] There are various clinical entities that can determine the clinical course and outcome in the ICU. Besides the type of poison, delayed presentation and multi-organ failure that require immediately advanced life support organ can lead to high mortality.[6,7] The clinical course and ultimate outcome, in turn, is related to the agent, the dose, pre-existing comorbidities, the time from exposure to presentation to a healthcare facility and the experience of care provider.[8] The main objective of the study was to evaluate the clinical profile and clinical outcome of patients on the basis of age, sex, patient characteristics, duration of hospital stay, co morbidities, type of chemical compound and patient presenting symptoms.

MATERIAL AND METHODS

It was a cross-sectional study conducted in Universal College of medical Sciences, Bhairahawa from 1 July, 2019 to 30 July 2020. Ethical clearance for the research was taken from Institutional review committee, UCMS (UCMS/IRC/079/19). The study included all patients presenting to emergency and intensive care units with organophosphate poisoning aged greater than 16 years. Data was collected from admission charts of the patients admitted with organo phosphorus poisoning. A total of 80 patients were included in this study.

As per the case file, the diagnosis depended on history given by patients or their family about intake of poison and clinical features suggestive of poisoning. Data regarding patient gender, age, marital status, time of ingestion, arrival to hospital, and reasoning of poisoning, type of poison, treatment, duration of hospital stay and outcome of the treatment was recorded. The data was analyzed using Statistical Package for the Social Sciences (SPSS) 20.

RESULTS

There were 30 males (37%) and 50 females (63%)

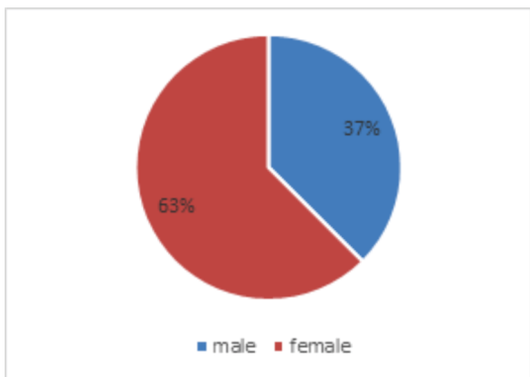

Figure 1. Sex distribution of OP poisoning

There were 17 (21%) cases less than 20 years, 33 (41%) cases 21-30 years, 10 (12.5%) cases 31-40 years, 8 (10%) cases 41-50 years, 9 (11%) cases 51-60 years and 3 (4%) cases greater than 60 years. The mean age was 29 years.

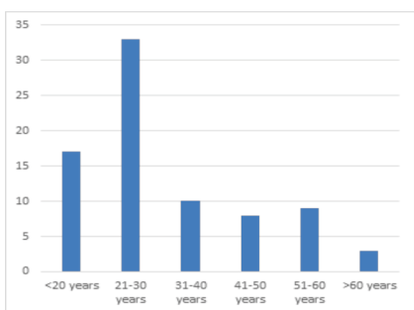

Figure 2. Age wise distribution.

Chlorpyriphos was most commonly ingested compound in 64 cases (80%) followed by dichlorvos in 12 cases (15%) and malathion in 4 cases (5%).

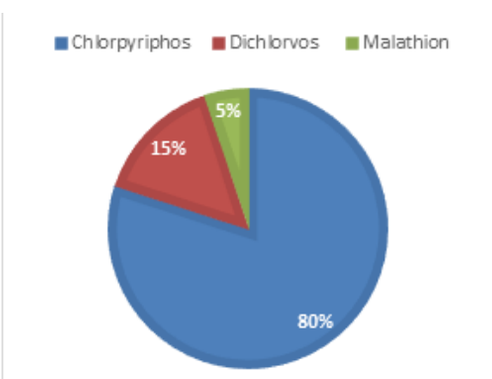

Figure 3. Distribution of OP compound

Out of 80 cases 33 (41%) consumed alcohol and 47 (59%) didn't consume alcohol.8 (10%) were smokers and 72 (90%) were nonsmokers.6 (11%) cases had diabetes and 12 (22%) cases had hypertension

Table 1. Distribution of patient characteristics

Alcohol	Yes	33
	No	47
Smoking	Yes	8
	No	72
Diabetis	Yes	6
	No	74
Hypertension	Yes	12
	No	68

Vomiting in 72 cases (90%) was most common presenting symptom followed by salivation and lacrimation in 65 cases (81%) then pain abdomen in 64 cases (80%),diarrhoea in 6 cases (7.5%) and seizure in 3 cases (3.75%).

Table 2. Distribution of presenting complaints

Presenting complain	Number
Vomiting	72
Salivation and Lacrimation	65
Pain abdomen	64
Diarrhoea	6
Seizure	3

43 cases (54%) had hospital stay of less than 5 days. 34 cases (43%) had hospital stay of 5-10 days and 3 cases (3.75%) had hospital stay of more than 10 days.

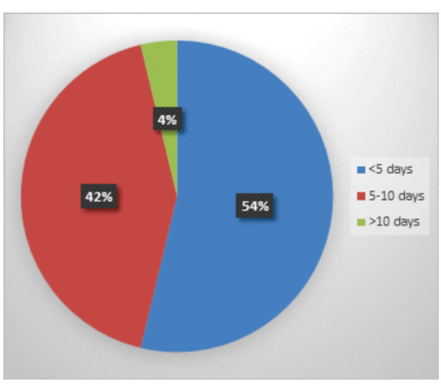

Figure 4. Duration of hospital stay

At the time of admission 48 cases (60%) were mild, 24 cases (30%) moderate and 8 cases (10%) severe based on POP scoring. Out of 24 moderate severity cases 1 case died where as 3 cases out of 8 severe cases died. There was no mortality in mild severity cases.

Table 3. POP scale category

POP scale category	Severity	Cases	Death
	Mild	48	0
	Moderate	24	1
	Severe	8	3

59 cases (74%) had uneventful recovery, 9 cases (11%) developed intermediate symptoms, 8 cases (10%) needed ventillatory support and 4 people (5%) died due to poisioning.

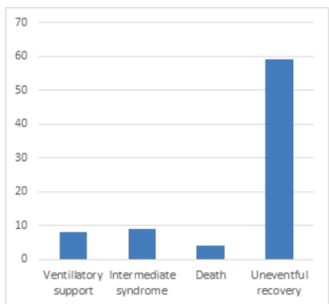

Figure 5. Outcomes of OP poisioning

DISCUSSION

In our study, females were more involved in organophosphate poisoning which was consistent with other studies conducted in different national hospitals.[9,10] More vulnerability of females to suicide attempts than males in developing countries like Nepal points towards various social and cultural factors revealing inequality. Factors like early marriages, fewer opportunities for education, domestic violence, abusive spouses, problematic love and marital relationships, and unwanted pregnancies, contribute to more suicide attempts by women.[11,12]

Most of the patients were from age group 21-30 years with mean age being 29 years. Other studies also showed similar results. In a study done in JanakpurDham Nepal 70.37% of total OP poisoning cases were between 15 to 30 years of age.[13] The probable cause is due to easy availability, cheaper price, large group of agricultural population and stressful life in young.[14] Astudy done at Bir hospital, Patan hospital, TUTH, BPKIHS, and WRH. the most common age group involved in poisoning was 15-24 years; about 45% of cases were of this age group.[15]

The most commonly used compound was chlorpyriphos followed by dichlorvos and malathion. Some studies from Nepal and other countries report methylparathion and dichlorvos as the commonest causes of OP poisoning.[16] But contrary to these studies and as mentioned by the National Forensic Science Laboratory[17], the use of a combination of chlorpyrifos and cypermethrin seems to be increasing.[10]

Vomiting, lacrimation, salivation and pain abdomen were main presentating complaints in patients. The commonest

symptom observed was vomiting (94%) followed by excessive secretions (84%) reported in study by Kammath S.[18] Vomiting was also the commonest symptom reported in the study by Goel et al (97.08%).[21]

Most patients had mild severity on POP scoring. Most important factor for improved survival was the mild disease status of the patients at presentation as calculated by the POP scale. The POP scale was first introduced in 1993 and analyzed many variables on admission. In patients with mild disease in a study by Amir A et al did not require mechanical ventillation.[19] Most of the poisoning cases were treated at general wards of Bir Hospital (77%). Selected cases requiring airway, cardiac or ionotropic support were shifted to ICU (17%).[14] As to why so many patients presented with mild disease status is a matter of opinion. Almost all ingestion is suicidal. However, most of the time this is a cry for helps; a desperate measure to seek attention. There are stark differences between disingenuous suicidal attempts and genuine ones which are all too apparent at presentation. Majority of the patients are of the suicidal attempts so mild cases were more.[19]

On grading of severity as per the POP scale, 27% of the patients had mild poisoning, 37% patients had moderate, whereas 36% had severe poisoning in a study done in india.[18]

Most of the patients hospital stay was less than 5 days.[15,20] 59 cases (74%) had uneventful recovery, 9 cases (11%) developed intermediate symptoms, 8 cases (10%) needed ventillatory support and 4 people (5%) died due to poisioning. A study from Janakpurdham Nepal showed mortality rate was 14.81 % of total admitted cases, with an average of 5.7 days of hospital stay in the recovered case.[13] In a study done in BPKIHS, Dharan the mean hospital stay was 6.7 days. Intermediate syndrome was seen in 5% of the patients of OP poisoning.[15] Similar outcomes of 13.20% requiring Intensive care admissions. 9.43% of them required respiratory support. 89% of the cases were discharged after successful treatment. Overall mortality occurred in three cases (5.66%) in a study done at Bheri Hospital Nepal.

CONCLUSIONS

Organophosphorous poisoning was the most common acute poisoning in young population. Females were more involved in organophosphate poisoning points towards various social and cultural factors revealing inequality with chlorpyriphos being the commonest agent in our study. Strict policies against the easy availability and sale of insecticides are required to control organophosphorus poisoning along with social and psychological support to most vulnerable age group.

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