

Pattern of poisoning cases in Emergency Department of Kathmandu Medical College Teaching Hospital

Thapa SR¹, Lama P¹, Karki N², Khadka SB³

¹Medical Officer, ²Intern, ³Lecturer, Kathmandu Medical College, Sinamangal, Nepal

Abstract

Objective: This study was conducted to determine the pattern and severity of poisoning cases in Emergency Department of Kathmandu Medical College Teaching Hospital, Kathmandu, Nepal (KMCTH).

Design: Retrospective observational study.

Materials and methods: Hospital records of all admissions to the Emergency Department of Kathmandu Medical College Teaching Hospital (KMCTH) following acute poisoning were revised and all data from February 2007 to February 2008 were analyzed retrospectively.

Results: This retrospective observational study was performed on 148 cases of poisoning who attended Emergency Department of KMCTH over a period of one year. The overall male to female ratio was 1.05:1. Poisoning was most common in the age group 21-30 years (40.5%). The most common causes of poisoning in adults were organophosphorous compounds and in children was kerosene oil. Oral route (79.05%) was the most common route of administration. 66.2% of cases were intentional poisoning for suicidal attempt. Students (43.9%) and service holders (18.9%) were commonly involved in poisoning.

Conclusion: It was seen that adult between 21-30 years of age were more prone to suicidal poisoning with organophosphorous compounds and children of 1-10 years of age were more susceptible to accidental poisoning with kerosene oil.

Key words: Kerosene, Organophosphorous, Poisoning, Suicide.

The last few decades have seen tremendous advances in the fields of agriculture, industrial technologies and medical pharmacology. These advances have been paralleled with remarkable changes in the trends of acute poisoning in developing countries¹. Poisoning is a common cause of mortality, especially among the young people in hospitals of Nepal. Use of poison is the main method of attempted suicide².

Poison is a substance capable of producing damage or dysfunction in the body by its chemical activity. It can enter the body in various ways to produce general or local effects (limited to the eyes, skin, lungs, etc.). All cases of poisoning that result from accidental use of drugs and chemical substances, or the use of drugs by children due to curiosity, are known as accidental or non-intentional poisoning. Poisoning is a qualitative term used to define the potential of a chemical substance in acting adversely or deleteriously on the body³.

In the management of poisoning cases, a quick and correct decision indeed is always desirable. The familiar adage "TREAT THE PATIENT, NOT THE POISON" is appropriately stated, as it is of no use to make vigorous

attempts at removing the ingested poison from patient's stomach in case there is no breathing or the blood pressure is not recordable. The first step, therefore, is to assess the patient's condition and to use whatever method is necessary to stabilize his condition. Attempts to identify the toxic agent and to assess its quantity and time of exposure should follow. Decision, whether the substance consumed is toxic or non-toxic, is very essential for planning the treatment⁴. Although the incidence of poisoning is high, fortunately morbidity and mortality due to poisoning is low especially in case of accidental poisoning because of low dose of poison⁴.

Materials and methods

This Retrospective observational study was carried out by data collected from the medical records of patients who had attended Emergency Department of KMCTH in between February 2007 to February 2008. A total of 148 cases of poisoning were included in this study.

Correspondence

Dr. Sanjay Raj Thapa
Kathmandu Medical College,
Sinamangal, Nepal
E-mail: dr.sthapa@gmail.com

The variables in these records - age, sex, occupation, circumstances of poisoning, name of the poisonous substances, severity and outcome were collected and analyzed. Cases with insect bite, snake bite and food poisoning were not included in this study.

Result

A total of 148 patients of poisoning who had attended Emergency Department of KMCTH during a year of study period were analyzed. There were 76(51.3%) males and 72(48.6%) females and the male female ratio was 1.05:1. The majority of poisoning was found in the age group of 21-30 years (40.5%) followed by 11-20 years (22.2%). Similarly, 14(9.4%) of the patients

were below 10 years of age. It was also observed that poisoning was most commonly seen in students 65(43.9%) and then in service holders 28(18.9%). Organophosphorous compounds and kerosene oil were the two most frequent agents involved in poisoning. There were 29 (19.5%) cases of organophosphorous poisoning in adult and 8(5.4%) cases of kerosene oil poisoning in children. Oral ingestion 117(79.05%) was the primary route of exposure. A number of 50 (33.7%) cases involved accidental poisoning while 98 (66.2%) involved deliberate poisoning. Fifty (37.6%) patients were discharged and 69(46.6%) patients were admitted.

Table 1: Distribution of poisoning by age

Age	No. of cases	Percentage (%)
<10 yrs	14	9.4
11-20 yrs	33	22.2
21-30 yrs	60	40.5
31-40 yrs	26	17.5
>40 yrs	15	10.1
Total	148	100

Table 2: Occupation of patients

Occupation	No. of cases	Percentage (%)
Student	65	43.9
Service holder	28	18.9
House wife	17	11.4
farmer	14	9.4
Others (including children)	24	16.2
Total	148	100

Table 3: Route of administration

Route	No. of cases	Percentage (%)
Oral	117	79.05
Inhalation	31	20.95
IM / IV	-	-
total	148	100

Table 4: Types of poison

Types of poison	No of cases	Percentage (%)
Organophosphorous	29	19.5
Carbonmonoxide	22	14.8
Alcohol	22	14.8
Zinc phosphate	12	8.1
Benzodiazepine	11	7.4
Kerosene	10	6.7
Others (phenol, polish remover)	6	4
Unidentified	10	6.7
Mushroom	9	6
Cannabis	9	6
Paracetamol	8	5.4
Total	148	100

Table 5: Reasons of taking poison

Reason	No. of cases	Percentage (%)
Accidental	50	33.8
Intentional(family conflict, job problem, psychiatric illness)	98	66.2
Homicidal	-	-
Total	148	100

Table 6: Types of disposal of patients

Disposal	No. of cases	Percentage (%)
Discharged from ER	55	37.1
Admitted	69	46.6
Referred to other center	6	4
LAMA	18	12.1
Died	-	-
Total	148	100

* LAMA : Left Against Medical Advice

Discussion

This study showed male to be more vulnerable than females. The overall male to female ratio was found to be 1.05:1 with male predominantly 76(51.35%) and female 72(48.65%). A study conducted on fatal poisoning cases in Tehran showed an overall male to female ratio of 1.9:1⁸. In this study the most common age group was 21-30 yrs which comprised 60(40.5%) and around 14(9.4%) of the poisoning cases were seen in children under 10 years of age. The result is consistent with the study carried at KMCTH three year back which shows 38.8% poisoning occur in age group was 21-30years⁴. In a similar study at Bir Hospital, Suvedi found 14-29 years age group to be most vulnerable to poisoning⁷. About 24.5% of the poisoning cases were seen in children under 12 years of age and 75.5% occurred in adults in the study done at Northern Iran⁵.

Studies conducted in Babol, have shown that 22% of acute drug poisoning occurred in children under-15 years of age and the remaining occurred in the older ages⁹. Similar results were found in other studies carried at other centre^{10,11,12,13}. The similarity of our results with those conducted in Nepal, most probably relates to the geographical, agricultural, social and cultural similarities.

It is noteworthy that 65(43.9%) of poisoning cases in our study occurred in students which corresponds well to the figure of (35.8%) reported from the similar study done at KMCTH three years back. Similar result was found in other studies done by Kafle et.al¹² and Pathak et.al¹³.

Our study indicated that the most common cause of poisoning was ingestion of organophosphorous compound. It accounted for 29 (19.5%) poisoning cases. The second most common cause was carbon monoxide followed by alcohol poisoning 22(14.8%). Oral Ingestion 117(79.05%) was the most common route of poisoning followed by inhalation 31(20.95%). Zinc phosphate accounted for 12(8.1%), Benzodiazepine 11(7.4%), kerosene 10(6.7%), Paracetamol 7(4.7%), Mushroom 9(6%), Cannabis 9(6%). We found 8 children out of 10 under 10 years of age have had kerosene poisoning. Not surprisingly alcohol intoxication was found common in this study. High carbon monoxide poisoning is due to poor ventilation which occurred during December and January and is mostly accidental. This result is consistent with other studies carried out in Nepal^{2,7,10,11,12,13}. Organophosphorous was the most common poisoning for the adults where as kerosene was common in children⁴. Oral route was the most common route of administration which accounted 86.57%⁴. It also became apparent that accidental poisoning in adults in northern Iran was mainly caused by organophosphorous compounds and the most common cause of poisoning amongst children has been accidental ingestion of kerosene⁵. Similar poisoning was found in a study done by Urmila et al in Nepal Medical College where kerosene poisoning was found in 68% of all childhood poisoning under five years¹⁰. Ghimire et. also found 18.2% of cases were of kerosene poisoning¹⁴.

The intentional poisoning comprised 98(66.22%) and remaining 50(33.78%) were accidental. In the study done by Khadka SB intentional poisoning comprised 58.2 % and accidental poisoning comprised 41.8%⁴. Sixty-two (36.5%) cases involved accidental poisoning while 108 (63.5%) involved deliberate poisoning in the study done in Diyarbakir City, in the Southeast Anatolian region of Turkey⁶. Intentional poisoning was seen in 1372 (78.3%) adults and 9 (1.7%) children in the study done at Northern Iran.⁵ These results are in sharp contrast to those reported from the USA where almost 90% of cases of poisoning were accidental. The high rates of intentional poisoning in this study may reflect increasing social, economical and psychological pressures in the past few years.

In this study, 69(46.6%) poisoning patients were admitted in Medical ward/ICU, 55(37.1%) were discharged from emergency after observation for few hours and 6(4.05%) were discharged from the hospital due to unavailability of bed in the hospital. Similar result was found in other studies done by Khadka et.al⁴.

Conclusion

Acute poisoning carries a significant impact on morbidity and mortality. Awareness and education about the potential toxicity of commonly used drugs and household substances may help in reducing the burden of acute poisoning. There has been a rising trend in the number of poisoning cases coming to the hospital. It has also been observed by the studies done at various time by Urmila et al in Nepal Medical College¹⁰, Pratap et al in TUTH¹¹, Khadka et al at KMCTH⁴, Kafle et al in TUTH¹². With the increasing stress in life, frustration, family conflict, economic status, job problem, easy availability of drug, pesticide suicide among adolescents and young adults is a common public health problem. Poor people usually in the winter season live and sleep in poorly ventilated room with burning firewood inside and often get poisoned with carbonmonoxide inhalation. So, awareness of the seasonal predominance could prove pivotal to the success of future preventive strategies and parents should keep chemicals and medications out of reach of young children.

Strict rules must be followed regarding sale of psychotropic medicines and pesticides, which are easily accessible and affordable, must be sold in the presence of a witness who should be known to the client. Potentially poisonous medicines must not be sold without prescription of registered medical practitioners. Similarly there is an urgent need for strict implementation of the Pesticide Act, which regulates the import, manufacture, sale, transport, distribution and use of pesticides with a view to prevent risk to human beings.

A high index of suspicion coupled with a good history of the drugs that patient had been taking, may help in making an early diagnosis that in turn may be life saving at times. The management of poisoning, in general, involves stabilization of the patient, a quick clinical evaluation, attempts at eliminating the poison (from either the gastrointestinal tract, skin, eyes, etc.) administration of an antidote, followed by supportive therapy, that in turn requires, skilled staff, specially trained for this purpose.

References

1. Sharma BR, Bangar S. Management of common poisoning: Changing trends and challenges. IJFMT 2005; 3(1).
2. Singh DP, Aacharya RP. Pattern of poisoning cases in Bir Hospital. Journal of Institute of Medicine 2006; 28:1.

3. Linden CH, Lovejoy FH. Illnesses due to poisons, drug overdose and envenomation. In: Fauci AS, et al#Harrison's Principles of Internal Medicine. Vol 2. 14th ed. New York: McGraw-Hill; 1998.
4. Khadka SB, Ale SB. A study of poisoning cases in emergency Kathmandu Medical College Teaching Hospital. Kathmandu University Med J 2005; 3:388-91.
5. Sobhani AR, Shojaii-Tehrani H, Nikpour E, Noroozi-Rad N. Drug and Chemical Poisoning in Northern Iran. Iranian Journal of Medical Sciences 2002 Mar 5; 01: 27.
6. Güloğlu C, Kara IH. Acute poisoning cases admitted to a university hospital emergency department in Diyarbakir, Turkey. Hum Exp Toxicol. 2005 Feb; 24(2): 49-54.
7. Suvedi BK. A retrospective study of poisoning cases at Bir Hospital, Nepal. J Inst Med. 1990; 12:296-302
8. Ghazi-Khansari M, Oreizi S. A prospective study on the fatal outcomes of poisoning in Tehran. Veterinary and Human Toxicology 1995; 37 (5):449-52.
9. Moghadam-Nia A, Abdollahi M. Acute poisoning in Babol, Northern Iran. Journal of Babol University of Medical Sciences 1998; 1:19-26.
10. Bharati U, Shrestha JB, Sharma M. Study of acute poisoning in Nepal Medical College. NMCJ 2000; 2: 83-5.
11. Prasad PN, Karki P. Poisoning cases at TUTH emergency: a one-year review. J Inst Med. 1997; 19:18-24.
12. Kafle KK, Gyawali KK. Organophosphorous-commonest poisoning agent. J Inst Med. 1992; 14:228-33.
13. Pathak U, Chhetri PM, Dhungel S, Chokhani R, Devkota K, Chandra K et.al. Retrospective study of poisoning cases admitted in Nepal Medical College. NMCJ 2002; 3(2):101-5.
14. Ghimire RH, Sharma S P, Pandey KR. A Comparative Study of Acute Poisoning in Nepal at Tertiary and Secondary Level Hospitals. J Nep Med Assoc. 2004; 43:130-3.