



CLINICO-ETIOLOGICAL PRO-FILE OF POISONING IN A TER-TIARY CARE CENTRE OF NORTH-EASTERN INDIA

General Medicine

Dr Madhuchanda Das

ABSTRACT

INTRODUCTION:

Poisoning is a common cause of visit to emergency department. The common poisons and their clinical presentation vary in different geographical areas.

AIMS AND OBJECTIVES:

Study of epidemiological profile and clinical presentation of poisoning cases.

MATERIALS AND METHODS:

Cross-sectional study conducted at SMCH for 1 year, including 743 patients of both gender, 12 years or older.

RESULTS:

The study showed male preponderance. The commonest poison type in male was organo-phosphorus compound whereas in females, phenol was commonest, organo-phosphorus compound being second common. Commonest age group was 20-30 years in both sex. Most patients presented with gastrointestinal symptoms. Most of the patients attended hospital within 4-8 hours of intake.

The mortality rate was 2.8% overall.

CONCLUSION:

This study showed a male preponderance of poisoning in the age group 20-30 years. The commonest etiology overall was organo-phosphorus compounds whereas in females, phenol was most common.

KEYWORDS

Epidemiology, Poisoning, Clinical profile

Poison is a substance that causes damage or injury to the body and endangers one's life due to its exposure by means of ingestion, inhalation or contact (Thomas *et al.*, 2004). It is labelled as acute if reported within 24 hours of exposure (Klassen *et al.*, 1986). Acute poisoning forms one of the most common causes of emergency hospital admissions. According to World Health Organization (WHO), yearly nearly three million of acute poisoning cases with are reported all over the world with 2, 20,000 deaths (WHO,1999). It has been estimated that, in India, 10% of admissions in medical emergency departments is due to acute poisoning (Sharma BR *et al.*, 2002) and the fourth common cause of mortality (Unikrishnan *et al.*, 2005). Recent data from National Crime Bureau of India shows poisoning accounted for 7.50% of all causes of un-natural deaths in the year 2007 (*National Crime Records Bureau Ministry of Affairs; 2009*). However, due to under reporting of poisoning cases and lack of up-dated database like Toxic Exposure Surveillance System (TESS) in India, the figure may be considered as tip of an iceberg (Centres for disease control).

Pattern of poisoning in a region depends on various factors which include availability and access to the poison, socioeconomic status of an individual, cultural and religious influences, etc. In India, as agriculture is the main occupation, insecticides and other agrochemical fertilizers are used to a greater extent and the poisoning with such products are more common (Aarons *et al.*, 2004). Recent study of poisoning statistics showed considerable difference even between various parts of India (Murari *et al.*, 2008).

Clinical manifestations due to poisoning depends on various factors including nature of poison, amount consumed and interval between intake and reporting. Thus the manifestations and outcome due to same poison type varies between person to person.

No study was previously conducted in epidemiological profile of poisoning in north eastern India. So this study was designed to see whether the epidemiological profile varies in this part of country or reproduces the similar results as previous studies.

AIMS & OBJECTIVES:

To study the epidemiological profile and clinical presentations of poisoning cases in this region

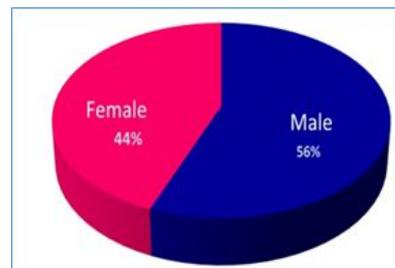
MATERIALS AND METHODS:

Hospital based single centered observational study conducted over a period of 1 year from July 2015 to June 2016. All patients reporting to medicine department of either gender and age > 12 years were in-

cluded in the study. Diagnosis was based on history, clinical features and the sample of poison brought by the attendant. Patients with doubtful history, chronic substance abuse, snake bite, insect bite and corrosive poisoning were excluded.

RESULTS & OBSERVATION:

The study was conducted on a total of 743 cases.



In this study, males outnumbered females. 56% patients were male against 44% of females.

Fig 1: showing sex distribution of patients

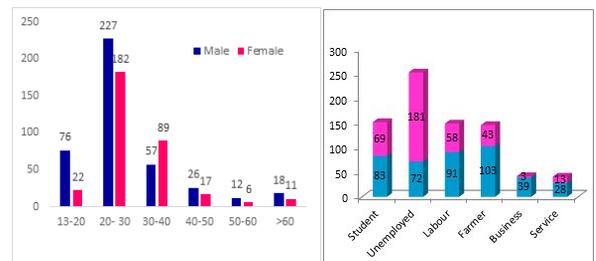


Fig 2: showing age and sex distribution of patients

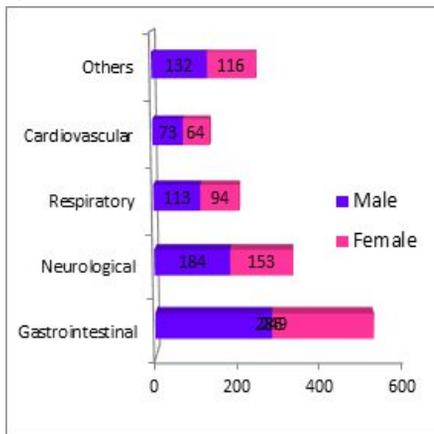
Fig 3: showing occupational group in poisoning

Mean age of the study population was 29.1 years. The commonest age group was 20-30 years where the males outnumbered the females.

The second commoner the age group was 30-40 years, where the females outnumbered the males

Fig 4: showing presenting features of poisoning cases

People of various occupational group presented with poisoning. However, among males most were farmers, followed by labour, students, unemployed youth, businessman and service holders respectively. Among females, commonest group was unemployed which includes both unmarried girls and housewives. Other groups were students, labour, farmer, service holder and doing business respectively.



The symptoms at presentation was not similar in all the participants. However most of them presented with multiple symptoms involving various organ system. Gastrointestinal system was most commonly involved and symptoms were mainly pain abdomen, vomiting, diarrhoea, epigastric burning and abdominal bloating. The neurological symptoms were altered consciousness, agitation, stupor, coma and seizure. The respiratory symptoms included cough, tachypnea, respiratory distress. The cardiovascular symptoms were palpitation, tachycardia. The other symptoms included fever, excessive sweating or dry skin, flushing etc.

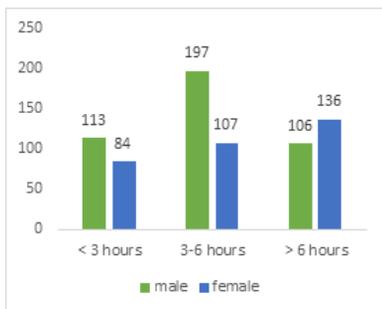


Fig 5: showing time interval between poisoning and hospitalisation

Most patients presented to the tertiary care centre within 3-6 hours. It was seen that primary care was received by the patients presenting in the interval of 3-6 hours or > 6 hours. However only 42% patients received primary care before hospitalization.

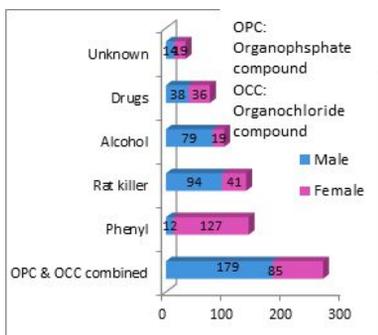


Fig 6: showing etiological profile of poisoning

The etiology of poisoning varies considerably in males and females. In males the commonest etiology is ingestion of organophosphate, organochlorine or a combination of both. The other substances used

were rat killer (contains barium chloride as the active moiety), alcohol, drugs, unknown substances and phenyl respectively. In females, the commonest substance for poisoning is phenyl used as a disinfectant for floors followed by organophosphate compounds, rat killer, drugs, alcohol and unknown substances respectively.

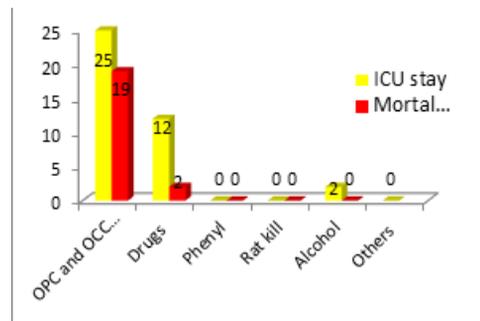


Fig 7: showing ICU stay and mortality in relation to type of poison

The complications vary in different types of poisoning. Total 39 cases were admitted in ICU and 21 cases expired in 1 year period. Most of the cases were due to organophosphate and organochlorine compounds. Other groups responsible were drugs and alcohol. No patient with phenyl, rat killer or other substances poisoning reported serious morbidity or mortality.

DISCUSSION:

The present series shows male preponderance in poisoning where 56% cases were male and 44% female. This matches with the study results of A Patil et al. (2014) (51.4% male and 48.6% female), B Maharani et al. (2013) (61.33% male and 38.66% female) but contradicts with study done by I Banerjee et al. (2014) (1568/ 4432 male and 2864/4432 female) and Pokhrel et.al (2008) in which incidence was high among females. In the present series, commonest age group of presentation was 20-29 years in 55% cases. The mean age of study population was 29.1 year. The findings correlate with the study done by Das et al (2007) where maximum cases were found between 21-30 years (74 cases, 49.33%), A Patil et al. (2014) (20-29 in 44.6% cases), Z Ozkose et al. (1999) (< 25 years at presentation in 63.6% cases) which can probably be explained by increased stress of the modern lifestyles, failure in love, family problems etc. in this age group. The study conducted by I Banerjee et al. showed higher mean age (36.32years) as compared to present series. In the present series, among males most were farmers, followed by labour, students, unemployed youth, businessman and service holders respectively. Among females, commonest group was unemployed which includes both unmarried girls and housewives. Other groups were students, labour, farmer, service holder and doing business respectively. It thus correlates with study results of I Banerjee et al. (commonest group housewives), B Maharani et al. (28% housewives). However farmers were commonest group in the present series but second commoner in study done by I Banerjee et al. and lesser in the study of B Maharani et al. Commonest presenting feature in the present series was with gastrointestinal disturbances followed by abnormalities of nervous system. It does not correlate with the results of A patil et al. where most of patients (48 out of 74) presented with neurological abnormality and gastrointestinal disturbance was second common mode of presentation.

The following table compares the etiological profile of poisoning of present series with other studies as depicted below:

Table 1: showing comparison of etiology in present series with studies done by other researchers

Poison type	OPC & OCC combine	Phenol	Rat kill	Alcohol	Drugs	Unknown
Present study (n=743)	264 (35.5%)	139 (18.7%)	135 (18.2%)	98 (12.8%)	74 (9.9%)	33 (4.4%)
I Banerjee (%)	21.84	-	16.49	13.8	2.3	4.6
B Maharani (%)	(58.66+3.33)	2	11.33	-	4	-
A Patil (%)	14.9	66.7% of 33	-	-	13.5	6/ 33
M Akbada (%)	18.9	-	-	-	71.1	-

In the present series, mortality rate was 2.8%. It is higher than the results of A patil *et al.*(0) and M Akbada *et al.*(2007) (0.8%) but lower than I Banerjee (16.24%) and B Maharani (11.99%) and shows similar result as seen in a study of Hong Kong (1.43%) (Chan *et al.*, 2005) All the cases in present series were due to organo-phosphates or organochlorine or drugs whereas Parjapati *et al.* re-ported household chemicals poi-soning in Ahmedabad having high-est mortality (Parjapati, 2013).

CONCLUSION:

OPC & OCC constitutes major part of common household poi-soning followed by phenyl. Unem-ployed group and the farming community are the major victims, possibly due to easy availability. Early reporting, prompt manage-ment, awareness and experience of the treating physician can be life-saving in many instances

REFERENCES:

- a. Aaron R, Joseph A, Abraham S, Muliyl J, George K, Prasad J *et al.* Suicides in young people in rural south-ern India. *Lancet.* 2004;363: 1117-1118
- b. AMIT PATIL I, RA-HUL PEDDADAWADI, VIKAS CHANDRA SAHAY VERMA, HEMANGI GANDHI: Profile of Acute Poi-soning Cases Treated in a Tertiary Care Hospital: a Study in Navi Mumbai: ASIA PACIFIC JOURNAL of MEDICAL TOXICOLOGY APJMT 3;1 <http://apjmt.mums.ac.ir> March 2014
- c. B. Maharani I and N. Vijayakumari: Profile of poisoning cases in a Tertiary care Hospital, Tamil Nadu, India: *Journal of Applied Pharmaceutical Sci-ence* 3 (01); 2013: 091-094
- d. Centres for disease control. Toxic exposure and surveillancesystem. Available from: <http://www.cdc.gov/Mmwr/preview/mmwrhtml/su5301a74.htm>
- e. Chan YC, Fung HT, Lee CK, Tsui SH, Ngan HK, Sy MY *et al.* A prospective epidemiological study of acute poisoning in Hong Kong. *Hong Kong J Emerg Med* 2005;12:156-61.
- f. Das R K. Epidemiolo-gy of insecticide poi-soning at A.I.I.M.S. Emergency service and role of its detection by gas liquid chromatog-raphy in diagnosis. *Medico legal update* 2007;7:49-60
- g. Indranil Banerjee, Santanu Kumar Tripa-thi, A Sinha Roy: Clini-co epidemiological profile of poisoned pa-tients in emergency department: A two and half year's single hospital experience: *International Journal of Critical Illness and Injury Science* | Vol. 4 | Issue 1 | Jan-Mar 2014
- h. Klassen C D, Andur M O, Doull J. Casarett and Doull's Toxicolo-gy. Macmillan, New York (1986) 10-17
- i. M. Akbada E. Nazlikan H. Demirhindi Z. Su-tolukY. Gokel: Etiolog-ical and demograph-ical characteristics of acute adult poisoning in Adana, Tur-key: *Human & Experi-mental Toxicology*; May 1, 2007
- j. Murari A, Sharma G K. A Comparative study of poisoning cas-es autopsied in LHMC New Delhi and JIPMER. *Journal of forensic medicine and toxicology.* 2008; 19: 19-21.
- k. New Delhi: National Crime Records Bureau Ministry of Affairs; 2009. *Accidental Deaths and Suicides in India 2008.* Available from: <http://ncrb. nic.in/ADSI2008/suicides-08.pdf>.
- l. Pokhrel D, Sirjana-pant, Pradhan A, Mansoor. A Compara-tive retrospective study of poisoning cases in central, zonal and dis-trict hospitals. *Kath-mandu university Journal of science, En-gineering and technol-ogy.* 2008;1(V): 40-48
- m. Prajapati T, Prajapati K, Tandon R, Mer-chant S. Acute Chemi-cal and Pharmaceuti-cal Poisoning cases Treated in Civil Hospi-tal, Ahmedabad: One Year study. *Asia Pac J Med Toxicol* 2013;2(2):63-7.
- n. Sharma BR, Harish D, Sharma V, Vij K. Poi-soning in Northern In-dia: Changing trends, causes and prevention thereof. *Med Sci Law* 2002; 42(3):251-7.
- o. Thomas W F, John H D, William R H. Stedman's medical dictionary. 28th edi-tion. Lippincott Wil-liam and wikins, Newyork. (2007) 2004
- p. Unikrishnan B, Singh B, Rajeev A. Trends of acute poisoning in south Karnataka. *Katmandu University Medical journal.* 2005; 3(2): 149-154
- q. World Health Organi-zation. Guidelines for poison control Bulle-tin 1999; Geneva: World Health Organi-sation.
- r. Z Ozkose F Ayoglu: Etiological and demo-graphical characteris-tics of acute adult poi-soning in Ankara, Tur-key: *Human and Ex-perimental toxicology*, october 1, 1999