

RESEARCH ARTICLE

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Corresponding Author

Kondle Raghu,
Department of Emergency & Critical
Care Medicine, NMCH,
Chintareddypalem, Nellore-3
Mobile: 919491041041



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Incidence and Outcome of Poisoning Patients in a Tertiary Care Teaching Hospital

Kondle Raghu, P. Shreevani, S. Satish Kumar, S. Gopal,
Mahaboob Vali Shaik, Basha Ahammed.

Department of Emergency & Critical care Medicine, Naryana Medical College Hospital
Chintareddypalem Nellore -524002, Andhra Pradesh. India.

ABSTRACT

Back Ground: Ninety-nine percent of fatal poisonings occur in developing countries, particularly among agricultural workers. In a particular area it is important to know the magnitude and pattern of acute poisonings as it is important for early diagnosis, treatment and for preventive measures.

Aim: To identify and compare the clinical characteristics and risk factors in poisoning patients presenting to the ED of a tertiary care rural Hospital.

Methods: Retrospective studies of 540 poisoning cases were recorded during the period of 4 years between April 2009 and April 2013 at Emergency Department, Narayana Medical College Hospital, Nellore, and Andhrapradesh. Fatal poisonings were studied for age, sex, socioeconomic status, marital status, type of poison and manner (accidental, suicidal or homicidal). Pre-hospital care, length of stay, outcome.

Inclusion Criteria: All patients presenting to emergency department age older than 18 years.

Exclusion criteria: Patients of paediatric age group were not included in the study.

Results: Out of 537 cases, Suicidal cases registered were 77.65% and Accidental cases registered were 22.35%. Out of total 537 cases, 257 (47.86%) were males while 280 (52.14%) were females. Higher poisoning rate observed in 20-30 age groups. Predominantly hair dye poisoning observed in 21.97%, Pesticide poisoning observed in 30.73%.

Conclusion: Young married males of rural background with agricultural occupation and failure of monsoon are the risk factors associated with poisoning cases.

Key Words: poisoning, suicidal, outcome.

INTRODUCTION

Everyday around the world, almost 700 people die from poisonings and for every person that dies, several thousands more are affected by poisoning. (1,2) Poisoning is the fourth most common cause of death in India (3). It has been estimated that, in India five to six persons per lakh of population die due to acute poisoning every year (4). Poisoning occur in all regions and countries and affect people in all age and income group. According to WHO (1999) more than three million poisoning cases with 251,881 deaths occur worldwide annually, of which, 99% of fatal poisonings occur in developing countries, particularly among agricultural workers. (2) Pattern of poisoning in any region also depends on availability and access to the poisons, socioeconomic status, religious and cultural influences, occupation prevalent in the region and likewise. The monsoon dependent agricultural practice and socioeconomic factors related to it play role in the incidence of acute poisonings. Rapid industrialization and massive use of pesticides in agriculture has increased the incidence of poisoning. In India, as agriculture is the back bone of the country, insecticides

are used to a greater extent and the poisoning with such products are more common (5). A detailed knowledge about the nature and magnitude of the poisoning cases in a particular area is not only important for early diagnosis and prompt treatment but also is essential for introducing the new and evaluating the old preventive measures. According to various studies organophosphorus compound forms the commonest poisoning substance in Asia.(6-9). A study by Thomas et al 2000 has shown an increasing trend of self poisoning among young adults.(10) The commonest cause of poisoning in India and other developing countries is pesticides, the reasons being agriculture based economics, poverty unsafe practices, illiteracy, ignorance and lack of protective clothing and easy availability of highly toxic pesticides. Organophosphorous compounds inhibit acetyl cholinesterase irreversibly resulting in accumulation of acetylcholine (Ach) and overstimulation of cholinergic synapses and produces muscarinic as well as nicotinic manifestations. Patients die mostly from respiratory failure and, the variability in the clinical features

depends on nature of compounds, amount consumed, severity, time gap between exposure, and presentation to the hospital.(11) Currently, a combination of an antimuscarinic agent (preferably atropine), and an AChE reactivator (called an oxime according to its chemical structure) is recommended for the treatment of OP poisoning. Information regarding organophosphorus compound poisoning in a particular region will help in early diagnosis and treatment of cases, thus decreasing the mortality and morbidity rates. Against this background, the present study was undertaken to know the nature, pattern and magnitude of the morbidity and mortality due to poisonings in the rural areas of Nellore, over the period of four years.

MATERIALS AND METHODS

Retrospective studies of 537 poisoning cases were recorded during the period of 4 years between 2009 and 2013 at Emergency Department, Narayana Medical College Hospital, Nellore, and Andhrapradesh. All ED admitted patients were studied for the information regarding total hospital admissions with number of patients cured, expired or absconded, for all leading unnatural causes of morbidity and mortality. With special reference to the admitted poisoning cases, information about exact poison whether known or not, and if known, the type of poison responsible for toxicity was noted. The fatal poisoning cases were also studied for information about age, sex, residence, socioeconomic status, marital status and type of poison responsible. Manner of poisoning, whether suicidal, accidental or homicidal was confirmed from accompanying police records. The exact types of poisons responsible in fatal cases were confirmed by crosschecking with chemical analyzer's report whenever possible. The Medical College Hospital where the present study was conducted is a referral center for 3 districts and most of the cases were referred here from rural areas. About 50-60% of total medicolegal work done across the district in this Institution. The Medical College hospital though a tertiary care center, is situated in rural area and only 17% of the cases are from urban areas of the district in this current study.

RESULTS

Out of total 537 cases of poisoning study, 257 (47.86%) were males while 280 (52.14%) were females. Out of total 537 cases, 77 (14.34%) were seen in <20 age group, 202 (37.62%) seen 20-30 age group, 112(20.86%) seen in 30-40 age group, 59 (10.99%) seen in 40-50 age group and 87 (16.20) were seen in >= 50 age group. Therefore, higher poisoning rate observed in 20-30 age group.

In the aspect of Types of poisoning, BZD over dose poisoning observed in 8.01%, Chemical poisoning observed in 5.77%, hair dye poisoning observed in 21.97%, herbicide poisoning observed in 0.93 %, insecticide poisoning observed in 3.35%, Over dose of various Medicines observed in 4.10 %, Oleander

poisoning observed in 1.86%, Pesticide poisoning observed in 30.73%, Rodenticide poisoning observed in 2.42%, accidentally scorpion sting observed in 5.03% and accidentally snake bite observed in 15.83 %. Therefore, the majority of poisonings are due to pesticide and hair dye poisoning. Drugs taken for poisoning majorly are of paracetamol, oral hypoglycemic agents, benzodiazepines, antiepileptic, antipsychotic drugs and mixture of tablets (polypharmacy).

Overall hospital mortality in poisoning cases 8.94% died during the course of treatment and 91.06% cases discharged home. Majority deaths are seen in organ phosphorus compounds secondary to respiratory paralyzation, pneumonia and septicemia and sudden cardiac arrest.

Out of 537 cases, Suicidal cases registered were 77.65% and Accidental cases registered were 22.35%. A total of 43 (8.01%) poisoning cases underwent dialysis due to acute kidney injury. A total of 21 (3.91%) cases underwent tracheostomy for prolonged ventilation. 287 (53.45%) cases were referred to ED from pre-hospital care centres and remaining 250(46.55%) cases were direct admissions to ED. ICU stays for poisoning cases kept for 1 day in 21.9 % cases, 2 days in 33.1% cases, 3 days in 21.4% cases and ≥4 days in 21.9 % cases. A total of 27 (5.03%) poisoning cases studied for 2DECHO.

The symptomatology of cases varied according to substance consumed and patient to patient. Commonest presenting complaints to emergency room were nausea, vomiting, pain abdomen, seizures, decreased level of consciousness, breathlessness, palpitations, tongue & neck swelling. Patients who left against medical advice from emergency room without admission were not included in the study, and pediatric populations were not included in the study.

AGE GROUP/GENDER	N	%
< 20	77	14.34
>= 50	87	16.20
20-30	202	37.62
30-40	112	20.86
40-50	59	10.99
MALE	257	47.86
FEMALE	280	52.14
Grand Total	537	100.00

Table.1. Age AND GENDER wise distribution of cases.

TYPE OF POISON	N	%
BZD over dose	43	8.01
Chemicals	31	5.77
Hair dye poison	118	21.97
Herbicides	5	0.93
Insecticides	18	3.35
Medicines	22	4.10
Oleander Seed	10	1.86
Pesticides	165	30.73
Rodenticide	13	2.42
Scorpion sting	27	5.03
Snake bite	85	15.83
Grand Total	537	100.00

Table 2. Types of poisoning

INTENTION	N	%
Suicidal	417	77.65
Accidental	120	22.35
Outcome	N	%
Recovered	489	91.06
Died	48	8.94
Grand Total	537	100.00

Table 3. Motive of Poisoning and outcome of poisoning cases

DIALYSIS	N	%
No	494	91.99
Yes	43	8.01
Tracheostomy	N	%
No	516	96.09
Yes	21	3.91
2D ECHO	N	%
No	510	94.97
Yes	27	5.03
Grand Total	537	100.00

Table 4. Requirement of dialysis, tracheostomy and 2D ECHO of poisoning cases

PRE HOSPITAL CARE	N	%
No	250	46.55
Yes	287	53.45
ICU Stay	N	%
1 day	118	21.9
2 days	178	33.1
3 days	115	21.4
<4 days	118	21.9
Grand Total	537	100.00

Table 5. Pre hospital care and ICU stay for poisoning cases

DISCUSSION

The study involved 537 patients. Our study showed that highest number of patients 202 (37.62%) belonged to age group 20-30 years. Various studies had reported very high female preponderance. In a study reported by Bajracharya *et al*, almost three fourth of the cases were females. (12) Where as in study by Paudyal BP also found female preponderance. In another study, 59.5% of cases were females and 40.5% males. (13) In the same aspect, our study showed a female preponderance of poisoning cases (47.86% were males while 52.14% were females). Ghimere *et al*, in their comparison of data of poisoning also noticed significant increase in percentage of male poisoning cases from 31.4% to 42.7%. (14)

In present study, the most commonly ingested poison was Pesticide poisoning observed in 30.73% followed by hair dye poisoning in 21.97%. Easy availability and low cost of hazardous pesticide plays a major role in suicidal poisoning in developing Asian countries like India, Srilanka, South Africa etc. Poisoning due to pesticide compounds and hair dye compounds has been increasing in the state of Andhra Pradesh where majority of them are agriculture farmers. It appears that easy availability of organophosphorus compound in India probably makes it a favorite substance for suicidal purpose.

In this study, majority of patients 77.65% consumed poison with suicidal intent as compared with 22.35% of the patient exposed accidentally. Our findings shows reliability with study completed at Southern India where 78% cases were suicidal attempt and 22 % were accidental. (15) A previous study showed that 47% of their poisoning cases were due to accidental poison.(16) Since pediatric cases were also included in their study, their findings are not comparable. In our study, 77 (14.34%) poisoning cases registered in the age group of <20. The overall mortality was found to be 8.94% in our study. Similar lower incidence of mortality was observed in other studies. In a study by Thomas *et al*., showed low mortality rate of 3.3% (52 deaths out of 1584 cases) and other study done in Malaysia showed mortality rate of 3.5% (779 deaths out of 21714 cases). (17) Nevertheless, the exact rate of mortality could not be established due to 12-15% of cases were taken home against medical advice due either to anticipated poor outcome or due to logistic reasons.

It was seen from our study on psychiatry assessment of all suicidal attempt cases, that majority of cases were associated with acute stress reaction. Various other factors like financial, academic, love breakup and social factors contributed to consumption of poison.

CONCLUSION:

Our study showed that male poisoning cases are increasing. Younger age group is more vulnerable for poisoning. Pesticide consumption remains the commonest agent used for poisoning. Community based awareness programs will help to prevent the instances of poisoning. Personnel guidance or counseling to students, unemployers, agricultural farmers, house wives from public/private medical professionals may decrease the incidence. Peoples should be more informed of the dangers posed by poison. Stringent rules against sale of pesticide which are easily accessible and affordable must be implemented. Training of physicians in the accurate diagnosis and prompt management of poisoned victims would improve the rate of survival. A widespread campaign to inform people of the possible dangers of poison would be useful.

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