Original Research

Profile of poisoning cases among autopsies conducted at Mysore Medical College & Research Institute, Mysuru, Karnataka.

Dayananda R[1], Kumar M P[2]

Abstract

Poisoning is a major concern, especially in developing countries. Recently, it has increased due to the frequent use of pesticides in agriculture and exposure to hazardous chemical compounds as a result of rapid industrialization. The aim of this study was to illustrate the epidemiological profile of poisoning cases autopsied at Department of Forensic Medicine and Toxicology, Mysore Medical College, Mysore. This retrospective study was conducted from 01/01/2016 to 31/12/2016 during which there were 152 cases of death due to poisoning. In the present study, 56 were females and 96 were males. 83 patients were from urban areas and the rest were from rural areas. The most common reason of poisoning was suicide. Organophosphorus insecticide was the prime culprit among all poisons.

Key words – Poison, autopsy, organophosphorus insecticide and manner of death.

Introduction:

One of the commonest causes of a visit to the casualty and important cause of mortality is death due to poisoning, which is a major health problem. The statistics of the United States shows that more than two million people have been poisoned annually.[1,2] All those substances which make life better, if not used wisely and with proper care would be dangerous to the human life. With the development of science and technology these substances are used in house hold works, paintings, grain preservatives, agriculture, industries etc. The poisoning cases are increasing day by day even with commendable advancement in the treatment. WHO estimated that approximately 3 million pesticide poisoning cases occur worldwide and cause more than 2200000 deaths per year.[3] The pattern of poisoning varies considerably in the developing and developed countries. In our continent (Asia) poisoning may be affected by social, economic and cultural conditions, including the religious beliefs.[4,5] The most prevalent manner of poisoning among adults in developing countries like India is suicide.[6] The prevalence of suicide has the highest rates of the intentional poisoning.[7] Suicide is attempted mostly by ingesting the lethal agents. Suicidal behaviour is any deliberate action that has potentially life-threatening consequences, such as drug overdose, deliberately consuming poison, hanging, drowning, burn etc.[8] Pattern of poisoning in a particular region depends on various factors like availability and access to the poison, socioeconomic status of an individual, educational status, knowledge on pesticides and their proper usage etc. In India agriculture is the main occupation hence insecticides are used to a greater

[1]Associate Professor, [2]Professor & Head, Department of Forensic Medicine, Mysuru Medical College & Research Institute, Mysuru.
Correspondence: Dr. Dayananda R
Tel: +919900076248
Email: drdaya.r@gmail.com

extent and the poisoning with such products is more common. —In the present study, an attempt has been made to study the socio-demographic profile of poisoning deaths in Mysuru Medical College, Mysurul.

Material and methods:

All cases of poisoning deaths brought to Mysore Medical College mortuary, Mysuru for autopsy from 1st January to 31st December 2016 were included in the study. The details of family history, previous medical history and any treatment records, if available was obtained from close relatives and concerned police.

An autopsy was performed as per the standard protocol. Relevant investigations including chemical analysis and histo-pathology examination were performed. Later data was collected and analysed with respect to age, sex, marital status, occupation, place of consumption and manner of death. The data obtained from this study were analysed with simple manual calculations.

Inclusion criteria

Cases in which poison was detected in the chemical analysis.

Exclusion criteria

1. Autopsy on unidentified bodies.
2. Autopsy on decomposed bodies.
3. Autopsy on alleged history of poisoning deaths with no poisons detected in chemical analysis.

Results:

In the present study, the incidence of death due to poisoning was more in the third and fourth decade as compared to both extremes of ages (Table 1). The majority of victims were males (63.2%) as compared to females (36.8%) (Table-1) and out of them, the majority of victims were married (58.6%). The main occupation among the cases of poisoning in our study was agriculture (41.4%) and the 20(13.2%) of them were unemployed. (Table 2)

The manner of death was decided from the history given by relative and police papers.

Table 1 – Age and sex wise distribution of cases.

Age group (years)	Males	Females	Total
1- 10	5	3	8(5.3%)
10-20	14	13	27(17.7%)
21-30	29	17	46(30.2%)
31-40	18	11	29(19.1%)
41-50	17	5	22(14.5%)
> 50	13	7	20(13.2%)
Total	96 (63.2%)	56(36.8)	152 (100%)

Table 2 – Distribution of cases according to occupation.

Occupation	Number of cases
Farmers	63(41.4%)
Manual laborers	31(20.4%)
Business	7(4.6%)
House wife	9(5.9%)
students	22(14.5%)
Unemployed	20(13.2%)
Total	152(%)

Table 3 - Distribution of cases according to the manner of death.

Manner of death	Number of cases
Suicidal	131(86.2%)
Accidental	19(12.5%)
Homicidal	2(1.3%)

The commonest manner of death was suicide (86.2%) which was followed by accidental deaths (12.5%) and the least was death due to homicide (1.3%). (Table 3)

A significant difference was observed with reference to locality (rural/ urban). The victims of death due to poisoning were more in an urban area (54.6%) as compared to a rural area (45.4%). (Table 4) In rural area maximum, poisonous death occurred by methyl parathion. In urban area maximum, poisonous death occurred due to Aluminium/Zinc Phosphide.

Out of the 152 cases, the majority of deaths occurred in the agricultural field (37.5%) followed by homes (35.5%) and the least common was work place.

Table 4 – Distribution of poisoning cases according to locality

Locality	Number of cases
Urban	83(54.6%)
Rural	69(45.4%)
Total	152(100%)

Table 5 – Distribution of poisoning cases according to place of incidence

Place of incidence	Number of cases
Agricultural field	57(37.5%)
House	54(35.5%)
Road side	21(13.9%)
Work place	16(10.5%)
Others	4(2.6%)

Discussion:

Rapid industrialization and massive use of pesticides in agriculture have increased the incidence of poisoning. In the present study death due to poisoning was higher in males than females, which was also supported by previous studies like Dalal JS et al[9], Gupta[10], Zine KU et al[11] and S Chaudhry et al.[12] Though all studies were conducted in different parts of India, male predominance was a common and constant feature. In present study, higher incidence of death due to poisoning was found in the age group 21–30 years, which was also observed in previous studies conducted by Navin Varma[3], AK Kapoor[13] and Dalal JS et al.[9] It could be explained by the fact that the persons of this young age group are suffering from stress of the modern life style, family problems, love-related issues, financial problems and failure in the exams etc.

The majority of deceased were farmers this may be due to the fact that farming is very much prone to financial losses in India this leads to increased financial burden to the farming community. There may be a situation when the farmers may not able to cope up with this loss and are forced to take the extreme step of suicide.

In the present study majority of the deaths were suicidal in manner. Self-poisoning is one of the oldest methods of committing suicide. Suicide is often an impulsive act resulting from the failure to adjust to their surroundings and cope with the stress they are exposed to. In addition to this, situations go worse when nobody is available for emotional support and understanding the feeling, one may resort to suicide as a solution to one's problem. 19 accidental deaths were present mainly because of ingestion thinking it to be a medicine or water. Two cases of homicide were there in which a person had administered poison to his wife and daughter. After which he had hanged himself due to financial problems. These are consistent with the studies by Varma[3] and A.K.Kapoor.[13]

Maximum numbers of poisoning cases were observed in an urban area as compared to the rural area because our centre mainly caters to the population of Mysuru city. Our results were consistent with Sanjeev Chaudhary et al.[12] It was inconsistent with the studies conducted by Navin Varma[3] and A.K.Kapoor,[13] where the rural area was more common.

Conclusion

1. The pattern of poisoning in the present study was more or less similar to the pattern found in most of the other studies.
2. Insecticides were most preferred poisons for suicidal purpose.
3. In case of accidental poisoning in children and elderly, supervision of the guardians is suggested.
4. Strict implementation of the pesticide act and involving a new policy by the government to educate the public about the harmful effects of Organophosphorus compounds could help in ameliorating the harmful effects of such poisoning.
5. Establishment of more Poison Information Centres to provide toxicity assessment and treatment recommendations over the phone throughout the day for all kinds of poison is recommended.

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