

Autopsy Evaluation of Pattern of Fatal Cases of Poisoning: A Retrospective Study**Abuzar Rizwi**

Assistant Professor, Department of FMT, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India

Received: 16-08-2023 Revised: 27-09-2023 / Accepted: 14-11-2023

Corresponding author: Dr. Abuzar Rizwi

Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to analyze the autopsy findings of fatal cases of poisoning retrospectively
Material & Methods: This retrospective study was conducted on 200 poisoning victims whose autopsy was done in Department of FMT for a period of one year.

Results: Majority of the people who died of poisoning belonged to the age group 21 to 30 years (30%) and the least number of victims were found to belong to the age group >60 yrs (1%). When classified according to sex, the population was found mostly of males (65%). The females made up remaining 35% of study population. Physical illness (40%) was the commonest reason for suicidal poisoning followed by marital dispute (21%) and economic crisis (12%). Other reasons for poisoning were accidental (6%), conflict with parents (4%), family dispute (3%), mental illness (3%), academic failure (3%) and others (2%). The external findings such as stains (0.50%), vomitus (3%), smell (3%) were observed on the bodies of some of the victims. Internal findings revealed that the content of stomach (28%) was the most common internal finding. Others were smell in the stomach, contents of small intestine and smell of the same, corrosion and perforation of oral cavity, perforation of stomach and small intestine.

Conclusion: Chemical analysis may fail to detect certain poison in the viscera preserved for chemical analysis. Therefore, evidences of the symptom, post mortem examination is important.

Keywords: Poisoning, suicide, autopsy findings, chemical analysis

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Death by poisoning is a common entity in many parts of the world. A report from the WHO and UNEP in 1990, estimated that more than 3 million people are hospitalized for pesticide poisoning every year, with mortality in the range of 2,00,000 to 2,20,000. [1] A significant global public health issue is poisoning, although its type and associated morbidity and mortality vary from one country to another. Accidental and intentional exposure that results in acute poisoning has a considerable death and morbidity rate. According to estimates from the World Health Organization (WHO), there are more than three million instances of intoxication worldwide each year, resulting in 6,40,000 fatalities. [2]

More than 90% of poisoning-related deaths take place in underdeveloped nations, especially among agricultural laborers. [3] In advanced countries, the fatality rate from poisonings is approximately 1% to 2%, while it might reach 20% to 30% for India. [4] In India, poisoning ranks as the fourth most common cause of death. [5] The World Health Organization (WHO) estimated 3 million cases of poisoning every

year worldwide, of which 99% of fatal poisoning cases occur in developing nations annually. [6]

In earlier times, the poisoning deaths from pesticides were mainly accidental but easy availability, low cost and unrestricted sale have led to an increase in suicidal and homicidal cases as well. [7] The easy availability and unsafe storage practices of pesticides in the homes of the rural poor mean that many acts of self-harm, at moments of acute distress, have fatal and sometimes unintended consequences. India leads all other countries of the world in both incidence as well as mortality. [8]

Poisoning being invariably medico legal in nature among fatal cases, post mortem examination is done to establish the exact cause and manner of death. Manner of death in these cases is predominately suicidal because of the general belief that it terminates life in minimal sufferings or accidental but however homicidal cases are also reported. the incidence of poisoning is increasing day by day because of its low cost, easy availability without any

check on their sales and irregularity in distribution. [9]

Hence the present study was conducted to analyze the autopsy findings of fatal cases of poisoning retrospectively.

Material & Methods

This retrospective study was conducted on 200 poisoning victims whose autopsy was done in Department of FMT, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India for a period of one year.

Inclusion Criteria

- Victims of poisoning whose body was autopsied in the mortuary of Netaji Subhas Medical College and Hospital, Bihta,

Exclusion Criteria

- Bodies pertaining to homicidal, unknown and decomposed bodies Materials used were inquest report and other relevant police documents, optic lens for magnification, metric tape for measurement, equipment for photography, a workstation for autopsy, autopsy certificate, records of hospitalization and treatments, if any and report of the chemical analysis from regional forensic science laboratory.

Methodology

The subjects of the study were 200 poisoning victims whose autopsy was done and various internal and external findings observed during the procedure noted and necessary specimen were sent for chemical analysis. The detailed history regarding the poisonous cases that were brought dead was obtained from the inquest from the relevant investigating officer, relative of the deceased and hospital records. the observations were analysed and subjected to comparison with studies along the same line.

Autopsy technique: The bodies of the deceased were examined post mortem using atmosphere technique of autopsy.

Statistical Analysis

Microsoft Excel 2016 was used to organize and summarize the data and generate the figures. IBM SPSS Statistics for Windows, version 27.0 (IBM Corp., Armonk, NY, USA) was used to describe the data, and the mean ± standard deviation are presented. To evaluate differences, χ^2 test (P-value < 0.05) was performed.

Results

Table 1: Demographic data

Age group in years	N	%
<10 years	4	2
11-20 years	40	20
21-30 years	60	30
31-40 years	34	17
41-50 years	40	20
51-60 years	20	10
>60 years	2	1
Gender		
Male	130	65
Female	70	35

Majority of the people who died of poisoning belonged to the age group 21 to 30 years (30%) and the least number of victims were found to belong the age group >60 yrs (1%). When classified according to sex, the population was found mostly of males (65%). The females made up remaining 35% of study population.

Table 2: Common reasons for suicidal poisoning

Common reasons	N	%
Physical illness	84	42
Marital dispute	44	22
Economic crisis	28	14
Accidental	14	7
Conflict with parents	12	6
Family dispute	6	3
Mental illness	6	3
Academic failure	6	3
Others	4	2

Physical illness (40%) was the commonest reason for suicidal poisoning followed by marital dispute (21%) and economic crisis (12%). Other reasons for poisoning were accidental (6%), conflict with parents (4%), family dispute (3%), mental illness (3%), academic failure (3%) and others (2%).

Table 3: Autopsy findings

Autopsy findings	No. of cases	Percentage
External findings		
Stains	1	0.50
Vomitus	6	3
Smell	6	3
Nil	187	93.50
Internal findings		
Oral cavity corrosion	2	1
Oral cavity perforation	4	2
Stomach content	56	28
Stomach smell	48	24
Stomach perforation	6	3
Small intestine content	46	23
Small intestine smell	32	16
Small intestine perforation	4	2

The external findings such as stains (0.50%), vomitus (3%), smell (3%) were observed on the bodies of some of the victims. Internal findings revealed that the content of stomach (28%) was the most common internal finding. Others were smell in the stomach, contents of small intestine and smell of the same, corrosion and perforation of oral cavity, perforation of stomach and small intestine.

Discussion

A material or chemical is considered to be poisonous if it causes harm to the body or puts a person's life in danger when ingested, inhaled, or in touch with it.¹⁰ Poisoning being invariably medico legal in nature among fatal cases, post mortem examination is done to establish the exact cause and manner of death. Manner of death in these cases is predominately suicidal because of the general belief that it terminates life in minimal sufferings or accidental but however homicidal cases are also reported. The incidence of poisoning is increasing day by day because of its low cost, easy availability without any check on their sales and irregularity in distribution.

Majority of the people who died of poisoning belonged to the age group 21 to 30 years (30%) and the least number of victims were found to belong to the age group >60 yrs (1%). When classified according to sex, the population was found mostly of males (65%). The females made up remaining 35% of study population. Males were more common victims of fatal poisonings than females which can be linked to the fact that males experience temptations, challenges, stressors, and strains more severely than females do. [11-13] In a study by Gopal et al period of survival beyond 24 hours were noted in 40.48% of total number of cases. This shows the better accessibility and apt management of medical aid.

[14] Physical illness (40%) was the commonest reason for suicidal poisoning followed by marital dispute (21%) and economic crisis (12%). Other reasons for poisoning were accidental (6%), conflict with parents (4%), family dispute (3%), mental illness (3%), academic failure (3%) and others (2%).

The external findings such as stains (0.50%), vomitus (3%), smell (3%) were observed on the bodies of some of the victims. Internal findings revealed that the content of stomach (28%) was the most common internal finding. Others were smell in the stomach, contents of small intestine and smell of the same, corrosion and perforation of oral cavity, perforation of stomach and small intestine. In study by Awasthi et al [15], on external examination of the deceased characteristic odor was present in 175 cases frothing at mouth and nose was present in 162 cases and cyanosis of extremities was present in 145 cases on internal autopsy examination congestion of GIT with sub mucous petechial hemorrhage and generalized visceral congestion was present in all cases. A quick stomach wash or even administration of activated charcoal. Mod [16] saw cases in which there were definite signs of death from poisoning, although the chemical examiner failed to detect the poison in the viscera preserved for chemical analysis. It has, therefore been widely held by that in case where a poison has not been detected on chemical analysis, the judge, is deciding a charge of poisoning, should weigh in evidence the symptom, post mortem appearances and the moral evidence.

Conclusion

Suicidal poisoning is the most common manner of death. Individuals in rural India resort to this desperate measure when unable to cope with financial and personal crisis. Chemical analysis may fail to detect certain poison in the viscera preserved

for chemical analysis. Therefore, in such cases the judge, is deciding a charge of poisoning, should weigh in evidence the symptom, post mortem appearances and the moral evidence.

References

1. Konradsen F, van der Hoek W, Gunnell D, Eddleston M. Missing deaths from pesticide self-poisoning. IFCS Forum IV. WHO Bulletin 2005;83(2). World Health Organization, Geneva.
2. World Health Organization: International Programme on Chemical Safety: Poisoning Prevention and Management. WHO; 2017.
3. Batra AK, Keoliya AN, Jadhav GU. Poisoning: An unnatural cause of morbidity and mortality in rural India. J Assoc Physicians India 2003; 51:955-9.
4. Pillay VV. MKR Krishnan's Hand Book of Forensic Medicine and Toxicology. Hyderabad: Paras Publications; 2000.
5. Unikrishnan B, Singh B, Rajeev A. Trends of acute poisoning in south Karnataka. Kathmandu Univ Med J (KUMJ) 2005;3: 14 9-54.
6. Jeyaratnam J. Acute pesticide poisoning: a major global health problem. World Health Stat Q 1990;43: 139-44.
7. Singh SP, et al. Study of poisoning trends in north India - A perspective in relation to world statistics. Journal of Forensic and Legal Medicine 2013; 20:14-18.
8. Shetty AK, Jirli PS, Bastia BK. Incidence of poisoning deaths in and around Belgaum, Karnataka: A retrospective autopsy survey.
9. MurariAtul, Sharma GK. A Comparative Study of Poisoning Cases Autopsied in LHMC, New Delhi and JIPMER, Pondicherry. Journal of Forensic Medicine and Toxicology 2002; 19 (1): 18-20.
10. Thomas WF, John HD, William RH. Stedman's Medical Dictionary. 28th ed. New York: Lippincott William and Wilkins; 2007. P .2004.
11. Stack S. Suicide: a 15-year review of the sociological literature part I: cultural and economic factors. Suicide and Life-Threatening Behavior. 2000 Jun;30(2):145-62.
12. Mościcki EK. Gender differences in completed and attempted suicides. Annals of epidemiology. 1994 Mar 1;4(2):152-8.
13. Girard C. Age, gender, and suicide: A cross-national analysis. American sociological review. 1993 Aug 1:553-74.
14. Gopal BK, Viswakanth B, Shruthi P, Varma RK. A Retrospective Analysis of Suicidal Poisoning Deaths in a Metropolitan City of South India. J Indian Acad Forensic Med. 2015;37(2):140-143.
15. Awasthi PM, Verma S, Dev R, Bajpai A. Trend of fatal poisoning in Kanpur: a two year autopsy based study. Int J Res Med Sci. 2018 Jan;6(1):259-63.
16. Mathiharan K, Patnaik (editors). Modi's Medical Jurisprudence and Toxicology. 23rd edition Lexis Nexis Butterworths; 2005:20-6.