

Study on acute poisoning cases brought for Medico Legal Autopsy in Gandhi Medical College, Secunderabad

G.Mahender¹, D.Laxmi², K.Sudhakar Suresh^{3*}, T.Nagendra Babu⁴

¹Assistant Professor, Department of Forensic Medicine, Gandhi Medical College, Secunderabad. ²Senior Resident, Department of Forensic Medicine, ESIC Medical College, Hyderabad. ³Assistant Professor, Department of Forensic Medicine, Osmania Medical College, Hyderabad. ⁴Final Year Post Graduate, Department of Forensic Medicine, Gandhi Medical College, Secunderabad.

How to cite this article: Mahender G, Laxmi D, Suresh KS, Babu TN. Study on acute poisoning cases brought for medico legal autopsy in Gandhi Medical College, Secunderabad. 2023;23(4):12-15.

ABSTRACT

Background: Regular epidemiological investigations are essential for gaining insights into the incidence of poisoning in various geographical areas. The purpose of this study was to assess the characteristics and trends of deaths due to poisoning in Gandhi Medical College, Secunderabad.

Methods: Hospital records, inquest reports, post-mortem reports and toxicological analysis reports were analysed among various age groups, sex, type and manner of poisoning. Snake bite poisoning cases were excluded.

Results: Out of 318 cases, we got positive toxicological analysis report for 287 (90.2%) cases. In our study predominance of male cases 259(81.45%) compared to female cases 59(18.55%) reported. In the age group most involved was 21-30 yrs 107 cases (34%) followed by 31-40 yrs 82 (26%), 41-50 yrs 49 (15%). Organophosphate poisoning reported in high number of cases 189(65.85%) followed by paraquat poisoning 44(15.33%), tablet poisoning 23(2.01%), Sulphuric acid poisoning 22(7.67%) and others 9 (3.14%) (Rodenticide, phenol, pyrethroid, nitrite). In manner of death suicidal cases 311(97.80%) reported more followed by accidental cases 7 (2.20%). In suicidal cases, economic constraints as a reason were outnumbered 209 cases (67.20%) followed by health issues 52(16.72%), academic failure 35(11.25%), love failure 15(4.82%). In region wise, rural areas reported more cases 244(76.73%) when compared to urban area 74 (23.27%). In season wise, more cases reported in April to July 148 cases (46.50%) followed by December to March 97 cases (30.5%), August to November 73 (23%). Zero homicidal poisoning noted.

Conclusion: Organophosphate poisoning in active male population of rural areas with economic constraints were reported to be predominant.

Keywords: Organophosphate, rural areas, suicidal cases, poisoning.

INTRODUCTION

Poison is defined as any substance in any form, entering a living body through any route or coming in contact with the body surface that will produce ill health or death by its local or remote action. Poisons were known to human from the prehistoric era. References about poisons and toxic agents can be obtained from

ancient Egyptian, Babylonian, Chinese and Indian scriptures and records [1]

Poisoning both accidental and intentional are a significant contributor to mortality and morbidity throughout the world. According to WHO three million acute poisoning cases with 2,20,000 deaths occur annually. Acute poisoning forms one of the commonest causes

Corresponding author: Dr. K. Sudhakar Suresh, Assistant Professor, Department of Forensic Medicine, Osmania Medical College, Hyderabad.

Email: ksudhakarsuresh6@gmail.com

of emergency. Pattern of poisoning in a region depends on variety of factors such as availability of poisons, socio economic status of the population, religious and cultural influences and availability of drugs.^[2]

Death consequent to poisoning will be considered as unnatural and must require meticulous investigation and scrupulous post mortem examination ^[3]. For the better prevention and saving the life of patients, sound knowledge of the type of poisoning and intention of act is essential.^[4]

The knowledge regarding the cases of acute poisoning is still inadequate in our country. Many studies even though done, could not resolve the difficulties in determining the detailed profile of poisoning cases. In order to overcome this, we, therefore formulated pattern of acute poisoning in our Gandhi hospital morgue.

MATERIALS AND METHODS

A retrospective study was conducted on 318 dead victims of suspected acute poisoning brought to the Gandhi Hospital mortuary, Secunderabad by police for medico legal autopsy. The samples (viscera and blood) collected during autopsy were sent for toxicological analysis to the Telangana state government forensic science laboratory (TSFSL) to detect poison. The poisoning data procured from the reports generated by TSFSL. Socio demographic data were obtained from the autopsy reports, police inquest reports and other hospital medical records.

Inclusion and Exclusion criteria

All cases which were treated and referred to Gandhi Hospital from throughout Telangana and other neighbour states during the period of 2020 year were included in this study. Covid positive cases and snake bite poisoning cases were excluded.

Manner of the death

The manner of death of these poisoning cases in the present study whether it is suicidal,

homicidal or accidental were decided based on (i) History given by the patients at the time of admission in the hospital, (ii) in cases of brought dead, history from the deceased relatives (iii) autopsy findings and (iv) police inquest reports.

RESULTS

Out of 318 total acute poisoning cases 287 cases were found to be positive for poisoning by laboratory tests. 31 cases were found negative for poisonous substances.

Males were predominating over females with 259 out of 318 cases compared to females 59.

The highest incident of poisoning cases noticed in young individuals as 92 belonged to the age group of 21-30 years with 59 males and 33 females

The different types of poison substances detected on laboratory examination of the viscera and blood samples preserved during autopsy

Organophosphate poisoning cases were highest (189) followed by paraquat (44), sulphuric acid (22),

Based on manner of death, the maximum number of cases 311 were suicidal, following 07 cases which were accidental. Among suicidal cases, economic constraint cases were highest (209) followed by health issues (44), academic failure (25) and love failure (13).

Based on socio demographic distribution of cases, rural cases (244) were topped compared to urban areas (74).

Table 1: Gender wise distribution

Age	Male	Female	Total	Percentage
0-10	5	2	7	2.20%
11--20	17	10	27	8%
21-30	88	19	107	34%
31-40	70	12	82	26%
41-50	43	6	49	15%
51-60	32	9	41	13%
61-70	2	0	2	1%
>70	2	1	3	1%
Total	259	59	318	100%

Table 2: Age wise distribution

Gender	Cases	%
Male	259	81.45%
Female	59	18.55%
Total	318	100.00%

Table 3: Type of poisons

Type of Poison	Cases	%
Organophosphate	189	65.85%
Paraquat	44	15.33%
Sulphuric acid	22	7.67%
Rodenticide	4	1.39%
Phenol	1	0.35%
Pyrethroids	3	1.05%
Nitrites	1	0.35%
Tablet poisoning	23	8.01%
Total	287	100.00%

Table 4: Manner of Death

Manner of Death	Cases	%
Accidental	7	2.20%
Suicidal	311	97.80%
Homicidal	Nil	Nil
Total	318	100.00%

In season wise, more cases reported in April to July 148 cases (46.50%) followed by December to March 97 cases (30.5%), August to November 73 (23%).

DISCUSSION

Out of 318 cases, we got positive toxicological analysis report for 287 (90.2%) cases. In our study predominance of male cases (81.5%) compared to female cases (18.5%) reported. The same reports were observed with study by Singh B et al⁴, Goswami O et al⁵, Parekh U et al⁷, Bhat NK et al⁸, Karikalan T et al⁹, Gupta BD et al¹⁰, Mugadlimath A et al¹¹, Antara Debbarma et al¹⁴. In contrast to our study female cases were outnumbered in Taruni NG et al⁶, Dash SK et al¹². In the age group most involved was 21-30 yrs 107 (34%) followed by 31-40 yrs 82 (26%), 41-50 yrs 49 (15%). The same reports were observed with study by Singh B et al⁴, Goswami O et al⁵, Dash SK

Table 5: Reason for Suicide

Area	Cases	%
Urban	74	23.27%
Rural	244	76.73%
Total	318	100.00%

Table 6: Region wise distribution

Reason for Suicide	Cases	%
Economic constraints	209	67.20%
Health Issues	52	16.72%
Academic Failure	35	11.25%
Love Failure	15	4.82%
Total	311	100.00%

Table 7. Season wise distribution

Months	Cases	%
April-July	148	46.54%
Aug-Nov	73	22.96%
Dec-Mar	97	30.50%
Total	318	100.00%

et al¹². In the study of Gupta BD et al¹⁰, 21-30 years outnumbered followed by 11-20 years, 31-40 years. Organophosphate poisoning reported in high number of cases 189(65.85%) followed by paraquat poisoning 44(15.33%), tablet poisoning 23(8.01%), Sulphuric acid poisoning 22(7.67%) and others 9 (3.14%) (Rodenticide, phenol, pyrethroid, nitrite). The same reports were observed with study by Singh B et al⁴, Goswami O et al⁵, Taruni NG et al⁶, Parekh U et al⁷, Bhat NK et al⁸, Karikalan T et al⁹, Gupta BD et al¹⁰, Dipayan Deb Barman et al¹³, Antara Debbarma et al¹⁴. In manner of death suicidal cases 311(97.80%) reported more followed by accidental cases 7 (2.20%). The same reports were observed with study by Singh B et al⁴, Goswami O et al⁵, Taruni NG et al⁶, Parekh U et al⁷, Bhat NK et al⁸, Karikalan T et al⁹, Gupta BD et al¹⁰, Mugadlimath A et al¹¹, Dipayan Deb Barman et al¹³. In region wise, rural areas reported more cases 244(76.73%) when compared to

urban area 74 (23.27%). The same reports were observed with study by Singh B et al.^[44], Goswami O et al^[5], Taruni NG et al^[6], Parekh U et al^[7], Bhat NK et al^[8], Karikalan T et al.^[9], Gupta BD et al.^[10], Mu gadlimath A et al.^[11]

CONCLUSION

Suicide an impulsive act due to failure of a person to get adjust to surrounding environment and unable to cope up to stress for which they are exposed. Loss of human life due to suicide poses a threat to the country and its economy. Skilful people are the asset of the country. Males in their 3rd decade from rural group with financial constraints are most effected when compared to others with organophosphate poisoning. India being an agrarian country, most of the people were engaged in agriculture related works where people have easy access to agriculture related chemical products which increasing the number of acute poisoning cases. Government should try to decrease mortality due to poisoning by taking welfare measures for the farmers also increase minimum support price for crops and also make arrangements to get crop loans at cheaper rates along with insurance of the crops. Literacy should be increased as a literate person can depend other than agricultural related jobs. Public should be educated regarding safe preservation of the chemicals which decreases accidental poisoning. Health infrastructure to be improved in rural areas so that poisoning cases will be treated effectively in golden time which decreases mortality. High mortality causing drugs like paraquat which has no antidote should be banned by the government and should go for another alternative drug.

DISCLOSURE

- No conflict of interest found with the authors.
- Self-funding
- This research work has been approved by the ethical committee of Gandhi Medical College, Secunderabad.

REFERENCES

- [1] Ignatius PC, Textbook of Forensic Medicine and Toxicology, 5th edition, Pg.no.498, Elsevier, Gurgaon; 2022.
- [2] Narayan Reddy KS, Murthy OP, Essentials of Forensic Medicine and Toxicology, 35th edition, Pg.no. 381, 2022.
- [3] Das RK. Epidemiology of insecticide poisoning at AIIMS emergency services and role of its detection by gas liquid chromatography in diagnosis. Medico update. 2007 Apr;7(2):49-60.
- [4] Singh B, Unnikrishnan B. A profile of acute poisoning at Mangalore (South India). Journal of clinical forensic medicine. 2006 Apr 1;13(3):112-6.
- [5] Goswami O, Mahanta P, Kalita D, Konwar R, Yadav DS. A three-year study on acute poisoning cases brought for medico-legal autopsy in a north-eastern city of India. Open access emergency medicine. 2021 Feb 12:45-50.
- [6] Taruni NG, Bijoy TH, Momonchand A. A profile of poisoning cases admitted in RIMS Hospital, Imphal. Journal of Forensic Medicine and Toxicology. 2001;18(1):31-3.
- [7] Parekh U, Gupta S. Epidemio-toxicological profile of poisoning cases-a five years retrospective study. Journal of forensic and legal medicine. 2019 Jul 1;65:124-32.
- [8] Bhat NK, Dhar M, Ahmad S, Chandar V. Profile of poisoning in children and adolescents at a North Indian tertiary care centre. J Indian Acad Clin Med. 2012 Jan;13(1):37-42.
- [9] Karikalan T, Murugan M. Profile of poisoning cases in a tertiary care Hospital, Tamilnadu. Journal of Evolution of Medical and Dental Sciences. 2014 Oct 27;3(56):12754-61.
- [10] Gupta BD, Vaghela PC. Profile of fatal poisoning in and around Jamnagar. Journal of Indian academy of forensic medicine. 2005;27(3):145-8.
- [11] Mugadlimath A, Kadagoudar S, Sheelvant S, Bambeshwar K. Profile of Medicolegal Autopsy Cases at Tertiary Care Centre in Bagalkot, Karnataka. Indian Journal of Forensic Medicine and Pathology. 2017 Apr;10(2):63-6.
- [12] Dash SK, Raju AS, Mohanty MK, Patnaik KK, Mohanty S. Socio-demographic Profile of Poisoning Cases, JIAFM 2005; 27(3): 133-138. ISSN 0971-0973.
- [13] Dipayan Deb Barman, Vijaya Kumar Nair. G, R. Karnaboopathy. Study of the Trend of Poisoning in a Tertiary Care Hospital in Chidambaram, Tamilnadu. JIAFM January-March 2017, Vol. 39(1): 20-24.
- [14] Antara Debbarma, Juthika Debbarma. A comprehensive study on insecticide poisoning patients brought to a tertiary government hospital in north eastern region of India. JIAFM Jul-Sep; 43(3): 246-248