

A Study of Autopsy Cases - Viscera Sample Reports A Retrospective Study

Selvaraj. K¹, Vinoth K.V², Sudalaimuthu. R³

¹Associate Professor, Dept. of Forensic Medicine, Govt. Thiruvannamalai Medical College, ²Associate Professor, Dept. of Forensic Medicine, Govt. Thoothukudi Medical College, ³Prof & HOD Dept. of Forensic, Medicine, Govt. Thoothukudi Medical College

Abstract

Analysis of viscera. i.e subjecting the internal organs, body fluids and secretions to Forensic Science lab is a part of routine procedure in complete autopsy. The viscera is sent to lab for detected of any poison or substance abuse eg. alcohol, organophosphorus poisoning. This retrospective study was conducted in Government Thoothukudi Medical College, Department of Forensic Medicine, during the period of Jan to March 2018. A total of 100 cases whose viscera samples sent to the forensic science lab were analyzed by perusing inquest reports, history of the case, autopsy findings, histopathology reports, and viscera reports. The data obtained from the study was analysed. 78 (78%) cases were males and 22(22%) cases were females. The maximum number of cases 21(21%) was seen in 31- 40 years. Alleged history of poison ingestion was noted in 21(21%) cases, out of which poison was detected in 10(10%) cases only. The poison was not detected in 11 (11%)cases. with a history of sudden death in 35 cases out of which 9(9%) cases poison was detected. organophosphorus compounds were found in 11(11%) cases and ethyl alcohol was detected in 6(6%) cases. Paraphenylene diamine was detected in one case and cyanide was detected in one case(1%). Hence it is recommended to send the viscera samples to the lab in all cases of sudden deaths.

Keywords: Autopsy, Viscera, Forensic Science Lab

Introduction

Analysis of viscera. i.e subjecting the internal organs, body fluids and secretions to Forensic Science lab is a part of routine procedure in complete autopsy. The viscera is sent to lab for detected of any poison or substance abuse eg. alcohol, organophosphorus poisoning. 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 by Thomas WF *et. all* ⁽¹⁾. Worldwide intentional poisoning is one of the important causes of mortality and morbidity by Eddleston M *et. all* ⁽²⁾. Distress due to loss in the business, failure in romance or differences

with the intimate partner, or examination, emotional disturbances, and chronic diseases are the common reasons for intentional poisoning by Chowdhary AN *et. all* ⁽³⁾.

The society of Forensic Toxicology and American Academy of Forensic Science combinedly recommends the following organs to be preserved for viscera analysis. Brain, Liver, Kidney 50 gms each. Heart blood 25 ml, peripheral blood 10 ml. Vitreous, bile and urine available quantity is collected ⁽⁴⁾. Studies have revealed that pesticides are the commonly used poisoning agents for intentional poisoning in India. As agriculture is a major profession in the rural part of India farmers stock the pesticides to eradicate the weeds and pests. Due to the easy availability of pesticides, they are commonly used by individuals to end their life in stressful situations. In medico legal cases most of the history of the case was not clear. The body may be found dead in some remote area or the house. The history of poison consumption

Corresponding author:

Dr. Vinoth.K.V,

Associate Professor, Department of Forensic Medicine
Kamaraj Nagar, Thoothukudi, Tamil Nadu -628008
E mail: drvinothkvacademics@gmail.com

may be concealed by relatives due to want to insurance money.

excluded from the study.

Materials and Methods

This retrospective study was conducted in Government Thoothukudi Medical College, Department of Forensic Medicine, during the period of Jan to March 2018. A total of 100 cases whose viscera samples sent to the forensic science lab were analyzed by perusing inquest reports, history of the case, autopsy findings, histopathology reports, and viscera reports. The data obtained from the study was analyzed. The cases in which viscera samples were not sent to the lab were

Results and Discussion

Out of 100 cases analyzed 78 (78%) cases were males and 22(22%) cases were females. In marital status 74(74%) cases were married and 19(19%) cases were unmarried and marital status was not known in 7(7%) cases. In analyzing religion 14(14%) cases belong to Christianity, 2 (2%) cases belong to Muslims and in 4 (4%) cases not mentioned as their identity of the body was not established. 80(80%) cases belong to the Hindu religion. In the age group of 31- 40 years maximum number of cases 21(21%) was seen. In the age group of 51- 60 years 20(20%) cases were seen.(Fig. 1)

DISTRIBUTION OF CASES - AGE WISE

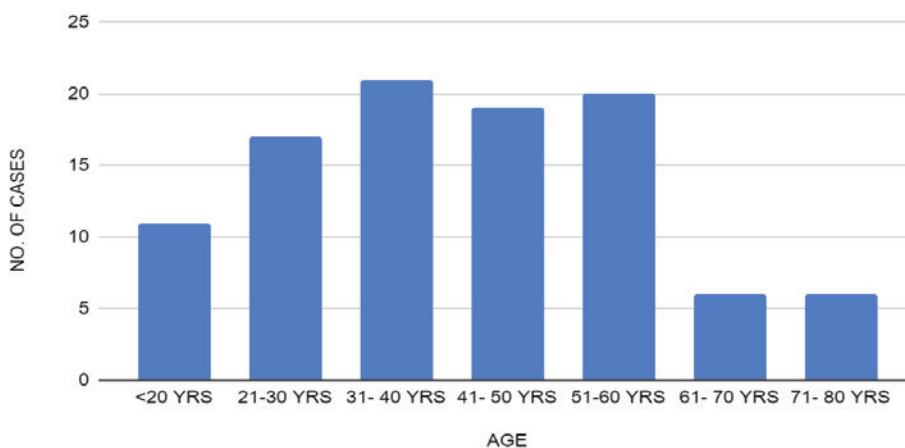


Fig:1. Distribution of cases among age group

Alleged history of poison ingestion was noted in 21(21%) cases, out of which poison was detected in 10(10%) cases only. The poison was not detected in 11 (11%)cases. (Fig:2)

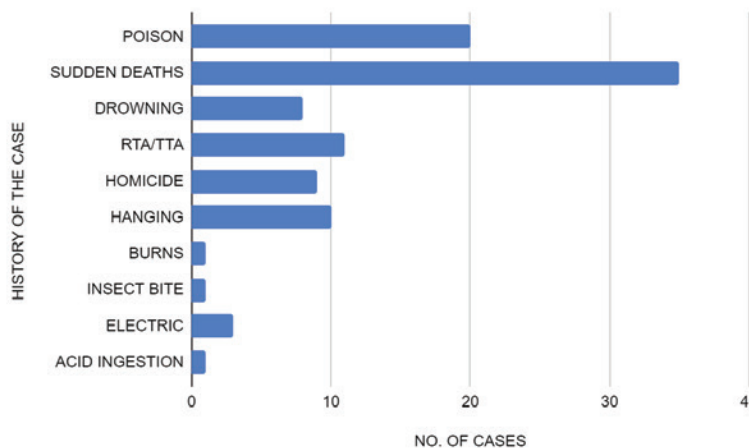


Fig:2. Distribution of cases according to the history of the case

This is similar to the study conducted by Gupta B.D *et.all* ⁽⁵⁾ 7.37% of cases poison was not detected. In these cases, the autopsy report showed a smell of kerosene/ pungent smell/change in the color of gastric contents. Hence the opinion was given as “*postmortem findings consistent with history and inquest report, clinical findings of poison, however, nature of poison was not detected in viscera report*”.

The reason for non-detection of poison in the viscera may be due the deceased may have been unusually susceptible to the effects of the poison. The poison has been removed from the gastrointestinal tract by vomiting and purging. The poison may be detoxified, conjugated, and eliminated by the kidneys. The detection of highly potent toxic substances with low lethal dose is quite difficult. Interference of proteins, fats, and decomposition products sometimes makes the detection difficult or rather impossible. Certain vegetable poisons may not be detected in the viscera as they have no reliable tests, while some organic poisons, especially the alkaloids and glucosides, may, by oxidation during

life or by putrefaction after death, be split up into other substances having no characteristic reactions sufficient to reveal identification. This is especially likely to occur in case of very volatile, for example, gaseous poisons. Lack of reliable means of extracting the poison from substances containing it or no satisfactory tests available for its identification Tyagi A *et.all* ⁽⁶⁾. Biological toxins and venoms that may be protein in nature cannot be separated from body tissues. Want care or skill on the part of the analyst ⁽⁷⁾

. In cases brought dead with a history of sudden death in 35 cases out of which 9(9%) cases poison was detected. A poison was detected in one case of homicide i.e.- ethyl alcohol. Out of detected cases organophosphorus compounds were found in 11(11%) cases and ethyl alcohol was detected in 6(6%) cases. Paraphenylene diamine was detected in one case and cyanide was detected in one case(1%). Alcohol/ poison not detected in none of the cases with history of road traffic accident(11%).(Fig.3)

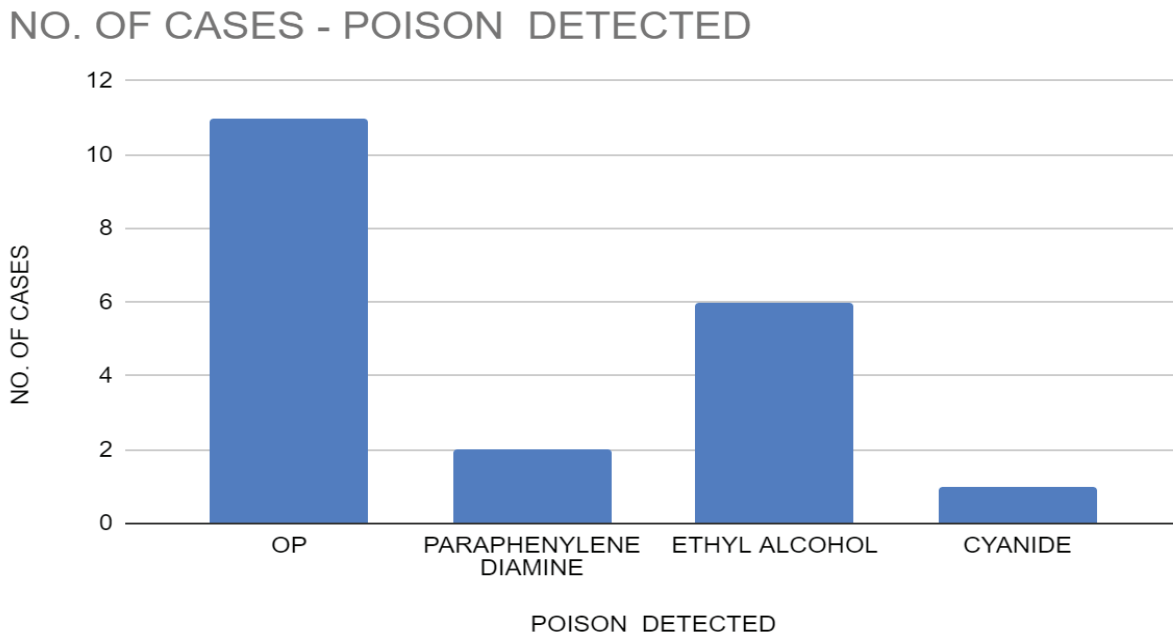


Fig:3 . Type of poison detected in the study group.

The cases reported as sudden deaths were seen in 40 to 60 years. In less than 20 years of age group 11(11%) cases were seen. Out of 35 (35%) cases with alleged history of sudden death, 25(25%) of cases of atherosclerotic coronary arterial heart disease was the cause of death. This corresponds to the study conducted by Fatma Sene *et.all* ⁽⁸⁾ and 1 (1%) due to esophageal variceal bleed. *No definite opinion on the cause of death* was given in 14(14%) cases. “In these 14 (14%)cases, no external or internal injuries seen anywhere on the body, gross and microscopic features of the organ within normal limits, no poison was detected in the viscera.

Another difficulty arises in concluding the cause of death is when viscera detected ethyl alcohol in internal organs but it is not at a fatal level, meanwhile autopsy findings of heart within normal limits, microscopy of heart, and other internal organs within normal limits. In this study, 3(3%) cases were fit into the above-mentioned scenario. Forensic lab quantification of ethyl alcohol only done, the rest of the common poisons such as organophosphorus poisons, aluminum phosphide, plant poisons quantification was not done.

Conclusion

Ideally all cases subjected to autopsy should be sent to viscera analysis for detection of poison. In mortuaries with excess overload of cases especially in our country not all cases brought for medico legal examination were subjected to viscera analysis. Only the cases with alleged history of poison ingestion, homicide cases, suspicious death, death in young age, viscera samples were preserved and sent to the lab. Major junk of cases was sudden death in this study 35 (35%) cases of sudden death were seen, in which no history of poison ingestion/ drug abuse was noted. Viscera analysis detected poison

in these cases. Hence it is beneficial for the doctor to send the samples for viscera analysis in all cases of sudden deaths.

Conflict of Intrest: Nil.

Source of Funding: Self.

Ethical Clearance: Nil

References

1. Thomas WF, John HD, William RH. Stedman's Medical Dictionary. 28th ed. New York: Lippincott William and Wilkins; 2007. p. 2004.
2. Eddleston M, Phillips MR. Self-poisoning with pesticides. *BMJ*. 2004;328:42–4.
3. Chowdhary AN, Banerjee S, Brahma A, Biswas MK. Pesticide poisoning in nonfatal, deliberate self-harm: A public health issue. *Indian J Psychiatry*. 2007;49:117–20.
4. Forensic Laboratory Guidelines. The Society of Forensic Toxicologist (SOFT) USA 2006. Available at www.soft-tox.org/files/Guidelines_Final.pdf.
5. GUPTA B.D, Vaghela P.C., Profile Of Fatal Poisoning In And Around Jamnagar JIAFM, 2005 ; 27 (3). ISSN 0971 -0973.
6. Tyagi A, Chawla H, Negative viscera report and its medicolegal aspects. *Int J Forensic Med Toxicol Sci* 2019;4(1):1-
7. Krihnan vij, TextBook Of Forensic Medicine And Toxicology. Principles And Practice Elsevier India, 2008 Edition page 447
8. Fatma Senel and Bülent Mızrak, causes of sudden natural death in adults: a retrospective study from malatya province, turkey *annals of pathology and laboratory medicine*, vol. 5, issue 5, may, 2018.