

Research Article**A Comprehensive Analysis of Poisoning Cases in Rural Area: A Retrospective Autopsy Study****Shivaramu MG¹, Vijay Kumar AG^{2*}, Kumar U³**¹Principal and Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, B G Nagara, Nagamangala Taluk, Mandya, Karnataka State, India²Assistant Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, B G Nagara, Nagamangala Taluk, Mandya, Karnataka State, India³Associate Professor, Department of Forensic Medicine & Toxicology, Adichunchanagiri Institute of Medical Sciences, B G Nagara, Nagamangala Taluk, Mandya, Karnataka State, India***Corresponding author**

Dr. Vijay Kumar AG

Email: vijay.fmt@rediffmail.com

Abstract: Poisoning occurs when any substance interferes with normal body functions after it is swallowed, inhaled, injected, or absorbed. The branch of medicine that deals with the detection and treatment of poisons is known as toxicology. In this retrospective study, poisoning cases autopsied during the period 1st January 2011 to 31st December 2014 were analyzed at the Department of Forensic Medicine & Toxicology, AIMS, B G Nagar, and Karnataka. In the present study, organophosphorus poisoning accounted in 22 cases, followed by aluminium phosphide in 12 cases. A study conducted in Pondicherry revealed a rapidly increasing trend in the incidence of organophosphorus poisoning over a 3-year period. Other studies also showed that organophosphorus is the most commonly used poisoning substances. In contrast, some other studies showed that majority of poisoning admissions were due to pharmaceutical agents. Poison centers are essential in the health care system and public health response to this growing problem.**Keywords:** poisons, organo-phosphorus, poison detection centre.

INTRODUCTION

Poison is any substance, which interferes with normal body functions after it is swallowed, inhaled, injected, or absorbed [1, 2]. The branch of medicine that deals with the study, diagnosis and treatment of poisons is known as toxicology [3].

Poisoning is an important cause of morbidity and mortality worldwide [4, 5]. According to World Health Organization, 3 million pesticide poisoning cases with 220,000 deaths occur yearly [5, 6]. About 99% of these deaths occur in developing and underdeveloped countries [7, 8].

Organophosphorus (OP) compounds cause most common suicidal deaths in southern, central India [9]. In northern India, aluminium phosphide causes most deaths [10-12].

With the development in the industrial and agricultural field and in medical sciences, much number of poisons has become available, which on exposure may produce severe toxicity [13]. In general, accidental poisoning is more common in young children, whereas suicidal poisoning is more common in young adults

[13]. A study from Vellore has shown an increasing trend of self-poisoning, especially among young adults [14].

MATERIALS AND METHODS

In this retrospective study, poisoning cases autopsied during the period 1st January 2011 to 31st December 2014 were analyzed at the Department of Forensic Medicine & Toxicology, AIMS, B G Nagar, and Karnataka.

RESULTS AND DISCUSSION

In the present study, organophosphorus poisoning accounted in 22 cases, followed by aluminium phosphide in 12 cases. According to a study conducted in Pondicherry showed, organo-phosphorus poisoning accounts maximum number of poisoning cases over a 3-year period. Other studies also proved that organophosphorus is the most commonly used poisoning substances to commit suicide. According to some other studies, the majority of poisoning cases were due to pharmaceutical agents. In a study conducted at the All India Institute for Medical Sciences, New Delhi, showed that pharmaceutical agents (18%) and insecticides (12.80%) are the most

common agents out of a total of 726 poisoning cases. In this insecticide group, carbamate (47) formed the maximum group followed by organophosphorus (43) and organochlorine compounds [13].

According to a study by Kartik P *et al.* [15]; Carbamate-Propoxure and Aluminium phosphide poisoning are the leading cause of deaths, because they are cheap, easily available without any restriction in market.

In this study, majority of the poisoning cases presented between 21 and 30 year age group. Similar findings were observed in other studies [16-19]. The

incidence of poisoning is maximum in 2nd and 3rd decade of life according to some studies [20, 21].

Males dominated the present study with male to female ratio of 3:1. Some other studies also have shown that males are higher compared to females [22, 23] and slightly more among females in others [24, 25]. This high proportion of poisoning among males might be due to change in the lifestyle, cultural patterns in this area and psychological and financial problems. These findings are similar to findings of other studies conducted by Gunnar DG *et al.* [18] at Gulberga shows that 65.65% of cases were male. According to study of Vinay Shetty [19] 51.5% of cases were males.

Table 1: Year wise distribution of autopsied cases

Year	Total no. of autopsied cases
2011	76
2012	100
2013	147
2014	130
Total	453

Table 2: Incidence of poison consumed cases.

Total no. of autopsied cases	Total no. of poison consumed cases
453	64

Table 3: Age and sex wise distribution of cases

Sl. No.	Age Group	Male	Female	Total
1	< 20 yrs	04	02	06
2	21 – 30 yrs	18	06	24
3	31- 40 yrs	11	04	15
4	41- 50 yrs	07	03	10
5	>50 yrs	06	03	09
	Total	46	18	64

Table 4: Type of poison consumed

Type of poison	No. of cases
Organophosphorus	22
Alluminium phosphide	12
Alcohol	10
Corrosive	7
Organocarbamate	7
Organochlorine	6

CONCLUSION

Poison diagnosis and detection centers are essential in the health care system to this growing problem. They provide immediate diagnosis and treatment chart that helps physician to provide quality treatment. These facility providers are backed by physicians with training and board certification in medical toxicology.

REFERENCES

1. Poisoning; Encyclopedia of Children's Health. Available from <http://www.healthofchildren.com/P/Poisoning.html>
2. Poisoning. Available from <http://medical-dictionary.thefreedictionary.com/poisoning>

3. Hodgson E; Textbook of Modern Toxicology. 3rd edition, A John Wiley & Sons, Inc., Publication, 2004: 3.
4. Eddleston M, Phillips MR; Self poisoning with pesticides. *BMJ*, 2004; 328: 42–44.
5. Jeyaratnam J; Acute pesticide poisoning: a major global health problem. *Wld Hlth Statist Quart.*, 1990; 43: 139–144.
6. WHO in collaboration with UNEP; Public health impact of pesticides used in agriculture. World Health Organization, Geneva, 1990.
7. World Health Organization; Public health impact of pesticides used in agriculture. Geneva, Switzerland, 1990: 30.

8. Gupta BD, Hapani JH, Shah VN; Current trend of poisoning in Jamnagar –An experiences of tertiary care teaching hospital. *JIAFM*, 2006; 28(3): 90-92.
9. Singh G, Khurana D; Neurology of acute organophosphate poisoning. *Neurology India*, 2009; 57(2): 119-125.
10. Siwach SB, Gupta A; The profile of acute poisoning in Harayana- Rohtak Study. *J Assoc Physicians India*, 1995; 43: 756–759.
11. Singh D, Tyagi S; Changing trends in acute poisoning in Chandrigah zone. A 25-year autopsy experience from a tertiary care hospital in northern India. *Am J Forensic Med Pathol.*, 1999; 20: 203–210.
12. Atul M, Sharma GK; A comparative study of poisoning cases autopsied in LHMC, New Delhi, and JIPMER, Pondicherry. *J Forensic Med Toxicol.*, 2002; XIX. Available from <http://www.jfimt.org/ARTICLE16.htm>.
13. Das RK; Epidemiology of Insecticide poisoning at A.I.I.M.S Emergency Services and role of its detection by gas liquid chromatography in diagnosis. *Medico-Legal Update*, 2007, 7(2). Available from <http://www.indmedica.com/journals.php?journalid=9&issueid=96&articleid=1310&action=article>
14. Thomas M, Anandan S, Kuruvilla PJ, Singh PR, David S; Profile of hospital admissions following acute poisoning-experiences from a major teaching hospital in south India. *Adverse Drug React Toxicol Rev.*, 2000; 19: 313–17.
15. Kartik P, Saumil PM, Pratik RP; Trends of Suicidal Poisoning In Ahmedabad (Retrospective Study). *NHLJMS*, 2012; 1(1): 18-22.
16. Gargi J, Rai H, Chanana A, Rai G, Sharma G, Bagga IJS; Current trends in poisoning-A hospital profile. *JPAFMAT*, 2003, 3: 41-45.
17. Singh O, Javeri Y, Juneja D, Gupta M, Singh G, Dang R; Profile and outcome of patients with acute toxicity admitted in intensive care unit: Experiences from a major corporate hospital in urban India. *Indian J Anaesth.*, 2011; 55(4): 370–374.
18. Gunnar DG, Prakash M, Reddy KSN; Organophosphorus compound poisoning in Gulbarga region - A five year study. *Indian Journal of Forensic Medicine and Toxicology*, 2008; 2(1). Available from <http://www.indmedica.com/journals.php?journalid=11&issueid=120&articleid=1596&action=article>
19. Shetty VB, Pawar GS, Inamadar PI; Profile of poisoning cases in district and Medical College Hospital of North Karnataka. *Indian Journal of Forensic Medicine and Toxicology*, 2008; 2(2). Available from <http://www.indmedica.com/journals.php?journalid=11&issueid=131&articleid=1736&action=article>
20. Chaudhary SK, Momin SG, Vora DH, Modi P, Chauhan V, Chotaliya D; An epidemiological study of fatal aluminium phosphide poisoning at Rajkot. *IOSR Journal of Pharmacy*, 2013; 3(1): 17-23.
21. Prajapati K, Merchant SP, Patel PR; Trends of suicidal poisoning in Ahmedabad (Retrospective Study). *NHL Journal of Medical Sciences*, 2012; 1(1): 18-22.
22. Dash SK, Aluri SR, Mohanty MK, Patnaik KK, Mohanty S; Sociodemographic profile of poisoning cases. *JIAFM*, 2005; 27: 133-138.
23. Srivastava A, Peshin SS, Kaleekal T, Gupta SK; An epidemiological study of poisoning cases reported to the National Poisons Information Centre, All India Institute of Medical Sciences, New Delhi. *Hum Exp Toxicol.*, 2005; 24: 279-285.
24. Tagwireyi D, Ball DE, Nhachi CF; Poisoning in Zimbabwe: A survey of eight major referral hospitals. *J Appl Toxicol.*, 2002; 22: 99-105.
25. Singh DP, Acharya RP; Pattern of poisoning cases at Bir hospital. *J Institute Med.*, 2006; 28(1): 3-6.