

POISONING PROFILE IN A TERTIARY MEDICAL HOSPITAL

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ABSTRACT

BACKGROUND

Acute poisoning with various substances is a common medical emergency everywhere. WHO estimates poisoning as one of the common causes of increased mortality and morbidity. Acute ingestion of poisonous substance is associated with high mortality unless an effective intervention is done.

METHODS

In this study, in an attempt to understand the profile of poisoning cases admitted in Kanyakumari Government Medical College, we have enrolled all the poisoning cases admitted in the Intensive Medical Care Unit in the time period of January 2015 to December 2015. It is a retrospective study and the data was collected from the medical records department.

RESULTS

A total of 502 cases were admitted of which 79.48% were males and 20.52% were females. Among them, 93.40% were due to intentional poisoning and 6.60% were due to accidental poisoning. The observed mortality rate was 14.34%. The poisoning cases clustered in the age group of 20–39 years, accounting to 57.17% of the total cases. Intentional poisoning was observed more in males in the age group of 20–29 years (81.32%). Organophosphorus compounds (28.68%) followed by oleander seed (21.91%), followed by rat killer (Zinc phosphide) (17.53%), Aluminium phosphide (7.57%), Tablet poisoning (5.78%), Pyrethroid (1.6%), carbamate (1%) were the commonly used poison agents.

CONCLUSION

Pesticides are the most commonly used poisoning agents in rural India. Lack of knowledge and easy availability of such compounds make them a common source of poison. Incidence of poisoning is more among males compared to females because of increased occupational stress faced by them.

KEYWORDS

Pesticide, Incidence, Drugs, Poison.

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INTRODUCTION: 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. Paracelsus, the Father of Toxicology once wrote, "Everything is poison, there is poison in everything. Only the dose makes a thing not a poison". Worldwide intentional poisoning is a major cause of mortality and morbidity.^[1] WHO estimates show that 30 lakh people die every year due to poisoning.^[2] Acute poisoning is exposure to a poison on one occasion or during a short period of time. Symptoms develop in close relation to the exposure. Absorption of a substance is necessary for systemic poisoning; substances that destroy tissue but do not absorb are called as corrosives. Agriculture pesticides are the commonly used agents for intentional poisoning in developing countries.

Due to the easy availability of pesticides (since agriculture is the major occupation in rural India), they are commonly used by the individuals to end their lives.^[3] Kanyakumari is a semi-urban district in the southernmost tip of Tamilnadu. Kanyakumari Government Medical College Hospital is a multispecialty hospital sub serving a population of 1.14 million people. This study was undertaken to understand the incidence and mortality of poisoning cases in the surrounding locality and to develop effective treatment protocols.

MATERIALS AND METHODS: The retrospective study was conducted over a period of 12 months from January 2015 to December 2015. All poisoning cases excluding corrosive poisoning and environmental poisoning like snakebites and insect bites were included in the study. Case records of poisoning were reviewed retrospectively from the Medical Records Department. A specially designed data collection was used to collect the details of patients' demography, type of poisoning agents consumed, route of ingestion, name of the poison, quantity, signs and symptoms, investigations done and treatment given, outcomes and events of mortality

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and reasons for mortality. The study was approved by the Institutional Ethics Committee.

RESULTS AND DISCUSSION: During the study period, 502 poisoning cases were reviewed retrospectively. Among them, 93.40% were due to accidental poisoning and 6.60% were due to intentional poisoning (Fig. 1). Commonly used agents were organophosphorus compounds (28.68%) followed by oleander seeds (21.91%). Oral route was the most common route of exposure followed by inhalational route. Majority of poisoning incidence was seen in the age group of 20-29 years (33.06%). Amongst the poisoning cases, adult males predominated over adult females (79.48% vs. 20.52%) (Fig. 2). In the adolescent group (13-19 years), females had a slightly higher incidence (46.96%) compared to their incidence in other age group. It was also observed that incidence of poisoning was decreased with increasing age. (Fig. 3). Among the substances used for poisoning organophosphorus compounds (28.68%) followed by oleander seed (21.91%), followed by rat killer (Zinc phosphide) (17.53%), Aluminium phosphide (7.57%), Tablet poisoning (5.78%), Pyrethroid (1.6%), carbamate (1%) (Fig. 4). Benzodiazepines (53.45%) followed by analgesics (26.79%), antidepressants (11.35%), barbiturates (5.70%) were the commonly used medications for poisoning.

The most commonly used agents in household poisoning include phenols, castor seeds, mosquito repellents and bleaching powder. There were 5 cases of heavy metals induced poisoning. Two cases were due to copper, 2 were due to zinc and 1 was due to mercury. There were 5 cases of poisoning due to unknown substances. Environmental poisoning and corrosive poisoning were not included in the study. Among the poisoning related admissions, 85.66% of patients recovered and 14.34% succumbed to the poisoning.

Among the 72 poisoning related deaths, 36 were due to organophosphorus compounds, 22 succumbed to aluminium phosphide compounds, 5 to oleander seeds, 3 to Paraquat, 1 to unknown poisoning and 1 to barbiturate poisoning. Case fatality rate was high for Paraquat poisoning (66.6%) followed by Aluminium phosphide poisoning (57.89%). (Table. 1) Various national and international studies have shown an increase in the incidence of poisoning.^[4]

During the study period, a total of 502 cases were collected with an average of 35-45 cases per month. Intentional poisoning was more common in the adult male group because they are exposed to more stress and strain in their profession and in day-to-day life. Cases clustered in the younger adult age group (20-29 years) may be because of problems in family, studies, marriage, employment and life settlement.^[5] Several studies have reported that pesticides were the most commonly used agents for poisoning in the Asia-Pacific region.^[6,7,1] India is a country where agriculture is the major occupation. Because of the easy availability of pesticides, people tend to use them for intentional poisoning. Apart from pesticides, oleander seeds and medicines like benzodiazepines, sedatives are commonly used for poisoning.

Medicines are used as poisoning agents for intentional poisoning in developed countries and urban areas of India. Poisoning incidence also varied according to seasons. Incidence was more during July and August followed by summer. The reasons observed for increased mortality were the delay in admission to hospital, improper management of the patient, lack of information regarding the poison agent and its antidote. To reduce the poisoning induced mortality and morbidity, following steps such as availability of standard treatment protocols for various poisons, adequate intensive care, educational programmes for rural people and providing counselling services may be more appropriate.

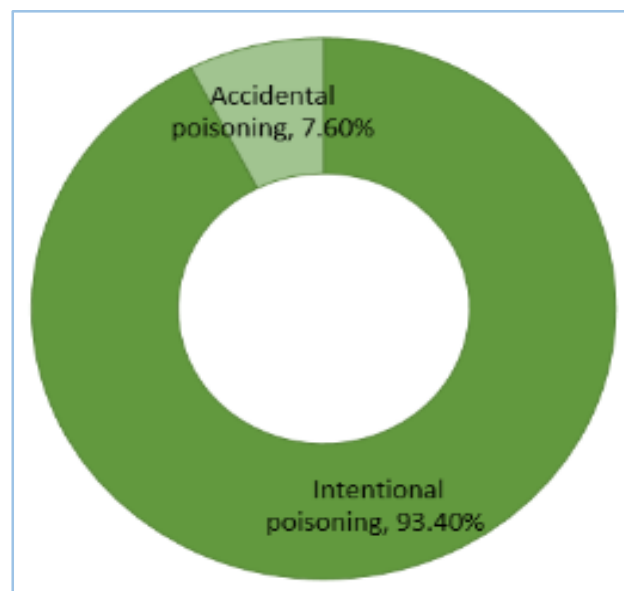


Fig. 1: Circumstances of Poisoning

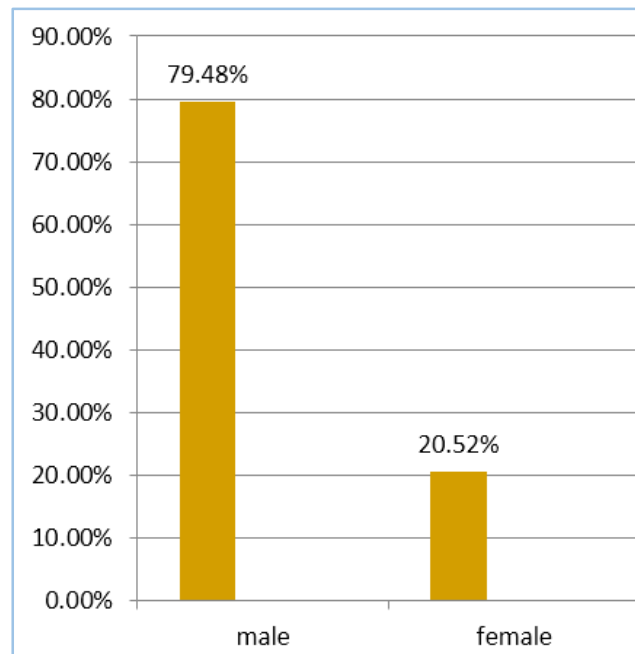


Fig. 2: Sex-wise Incidence of Poisoning Cases

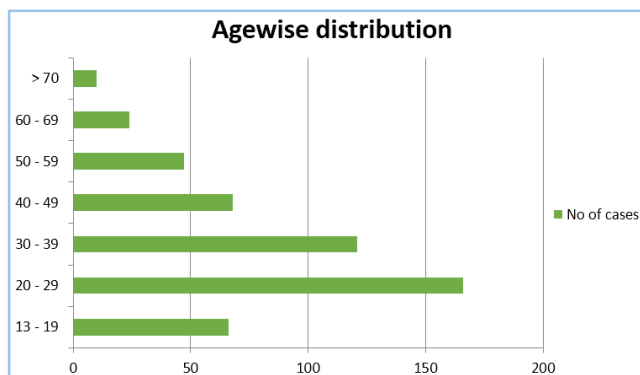


Fig. 3: Age wise Distribution of Poisoning Cases

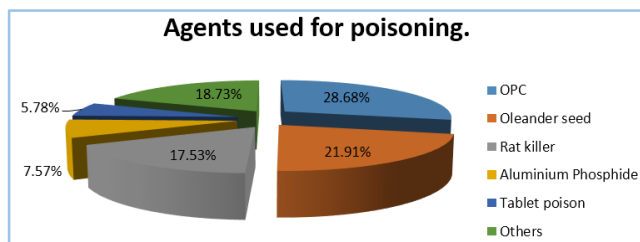


Fig. 4: Agent Used for Poisoning

Poison agent	Total Cases	Cases Cured	Deaths
OPC	144	108	36
Aluminium Phosphide	38	16	22
Oleander seed	110	105	5
Tablet Poisoning	29	28	1
Paraquat	3	-	3
Unknown	5	5	1

Table 1: Treatment Outcome and Incidence of Mortality

CONCLUSION: Pesticides are the most commonly used poisoning agents in rural India. Lack of knowledge and easy availability of such compounds make them a common source of poison. Incidence of poisoning is more among males compared to females because of the increased occupational stress faced by them.^[8]

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