A Retrospective Study of Annual Poisoning Profile in a Tertiary Care Hospital in South India for the Year 2017-18

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[1#]Yogesh C, [2]Priyanka, [2]Amirthvarshan, [2]Paranthaman

[1#]Associate Professor, Department of Forensic Medicine, Velammal Medical College Hospital & Research Institute, Madurai, Tamil Nadu.

[2]Undergraduate Student, PSG Institute of Medical Sciences and Research, Coimbatore, Tamil Nadu.

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Corresponding author: Yogesh, Associate Professor, Department of Forensic Medicine, Velammal Medical College Hospital & Research Institute, Madurai, Tamil Nadu. Email: dr.c.yogesh@gmail.com. Phone: 9980025510

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ABSTRACT

Introduction: Poisoning is a common medicolegal problem now days all over the world as it consumes not only the valuable health service resources but also causes considerable morbidity and mortality.

*Aims and Objectives: Th*e present study was carried out with the objective to find out the pattern of acute poisoning in a tertiary care hospital in South India in one year.

Materials and methods: A retrospective analytical content based analysis was made on 130 poisoning cases recorded in a tertiary care hospital in South India in one year from June 1st 2017 to May 31st 2018 and the results were tabulated.

Results: Of the 130 cases, 52 were males and 78 were females with 31 cow dung poisoning cases (23.84%) as the most common followed by OPC poisoning with 22 cases (16.92%) and rat killer poisoning with 17 cases (13.07%).

Conclusion:: Our study concludes that cow dung is the most common agent of poisoning followed by rat killer and OPC- all related to agricultural occupation with recommendation to establish a Poison Information Centre in all hospitals.

INTRODUCTION

A poison is a substance that may produce death, serious illness, or harmful effects when introduced into the body in a relatively small quantity.[1] According to World Health Organization,(WHO) poisoning occurs when people drink, eat, breathe, inject, or touch enough of a hazardous substance (poison) to cause illness or death.[2] Poisoning is a medical emergency and a patient is always invariably rushed to the hospital at the earliest possible moment, irrespective of the amount and nature of poison ingested. Earlier reports demonstrated that everyday almost 700 people die from poisonings around the world and for every person that dies, several thousands more are affected by poisoning.[3] It is estimated that up to half a million population die every year as a result of poisoning particularly due to pesticide poisoning.[4] It has been estimated that, in India five to six persons per lakh of population die due to acute poisoning every year.[5] Pattern of poisoning in any region depends on availability

of poisons, socio economic status of the population, religious and cultural influences, occupation prevalent in the region and likewise.[6] In advanced countries, it has been observed that poisoning deaths are mainly due to cleansing agents, detergents, paracetamol, carbon monoxide and other cosmetic products.[7] In India, as agriculture is the main occupation, insecticides and other agrochemical fertilizers are used to a greater extent and the poisoning with such products are more common.[8] Organophosphorus poisoning occurs very commonly in southern India, where farmers form a significant proportion of the population who commonly use organophosphorus compounds like parathion as insecticides. Thus, due to the easy accessibility of these compounds, a large number of suicidal cases are encountered in this region.[9] In addition to that, snakebite is a common acute medical emergency faced by rural populations in tropical and subtropical countries with heavy rainfall and humid climate.[10] Reducing deaths due to poisoning requires improved medical management of acute poisoning. A detailed knowledge about the pattern of poisoning cases in a particular area is not only important for early diagnosis and prompt treatment but also is essential for introducing the new and evaluating the old preventive measures. Information available in our locality with regard to acute poisoning is limited. Hence this present study was carried out with the objective to find out the pattern of acute poisoning in a tertiary care hospital in South India covering most of the South Indian population.

MATERIAL AND METHODS

A total of 130 poisoning cases were studied that was recorded in one year from June 1st 2017 to May 31st 2018 in a tertiary care hospital in South India. It was a retrospective analytical study with secondary data obtained from the Medical Records Department in the hospital. It was a based on content analysis where a proforma was formed related to the nature and details of the poisoning that was used to obtain the data.

Inclusion Criteria: All age group registered with poisoning cases and treated in the hospital were included in the study.

Exclusion Criteria: Unregistered cases and cases that were sent for further referral from the hospital were excluded from the study.

Statistics: The data was analysed and results were tabulated using simple tables and pie charts. Percentage calculations were made for better statistical reporting.

RESULTS

Out of the 130 cases, 52 were male and 78 were females accounting for 40% and 60% respectively. With regards to age distribution, 13 cases(10%) under 15 years of age, 63(48.46%) cases from 16-30 years of age, 34(26.15%) cases from 31-45 years of age, 15(11.53%) cases from 46-60 years of age and 5(3.84%) cases over 60 years of age. With regard to type of poisoning, Table 1 clearly shows the various poisons consumed. Apart from them, 10 cases of snake bite and 6 cases of scorpion sting were reported accounting for 7.69% and 4.61% respectively. The duration of hospital stay was divided into 4 categories and tabulated in Table 2. With regard to time of incident, 12 poisonings(9.23%) occurred before 8am, 48 cases(36.92%) from 8am-4pm and 70 cases(53.84%) from 4pm-12pm. The time lapse between incident and admission in hospital is tabulated in Table 3. On the grounds of occupation, 8 cases(6%) among professionals, 21 cases(16%) among labourers, 43 cases(33%) among housewives, 28 cases(22%) among students, 5 cases(4%) among retired, 11 cases(9%) among unemployed, 13 cases(10%) among children under 15 years of age were reported. Pie charts 1 and 2 are given to depict the sex distribution and the occupational distribution of poisoning respectively.

DISCUSSION

Modern toxicology is a multidisciplinary science and forensic toxicology is required to determine any exogenous chemical agent present in biological specimens made available in connection with medico-legal investigations. [11] Poisoning is a common medicolegal problem now days all over the world. It consumes not only the valuable health service resources but also causes considerable morbidity and mortality. It has been reported that acute poisoning approximately constitutes 10% of admissions in medical emergency departments in India. In our study, cow dung poison forms the most common poison with 31 cases (23.84%) of poisoning – the reasons being easy availability and agricultural occupation. This was similar to the study done in Karpagam Faculty of Medical Sciences and Research, Coimbatore where 55% cases were due to cow dung powder.[12] Cow dung, which has germicidal property, was used in ancient days to clean living premises in South India. Nowadays, people

Table 1: Types of poisoning

Type of Poisoning	Number of cases	Percentage
Cow dung poisoning	31	23.84%
Rat killer poisoning	17	13.07%
Antipsychotic poisoning	3	2.30 %
Unknown liquid poisoning	2	1.53%
Ant killer and alcohol poisoning	1	0.76%
Cleaning liquid poisoning	2	1.53%
Insecticide poisoning	4	3.07%
All out poisoning	6	4.61%
Paracetamol poisoning	7	5.38%
Benzodiazepine poisoning	3	2.30%
OPC poisoning	22	16.92%
Thyroid tablet poisoning	1	0.76%
Alprazolam poisoning	1	0.76%
Phenytoin poisoning	1	0.76%
Ant killer poisoning	2	1.53%
Harpic poisoning	3	2.30%
Insecticide poisoning	2	1.53%
Pesticide poisoning	2	1.53%
Paraquat poisoning	4	3.07%

Table 2: Duration of hospital stay

Duration of hospital stay	Number of cases (%)
Less than 5 days	106 (81.53%)
6-10 days	21 (16.15%)
11-15 days	1 (0.76%)
More than 15 days	2 (1.53%)

Table 3: Time lapse between incident and admission in hospital

Time lapse	Number of cases (%)
Less than 1 hour	47 (36.15%)
1-6 hours	59 (45.38%)
6-12 hours	16 (12.30%)
>12 hours	8 (6.15%)

are using commercially available synthetic cow dung powder, containing Auramine O.[12][13] Auramine causes centrilobular necrosis of liver. It is also a gastrointestinal tract irritant causing mucosal damage, epigastric pain, and discomfort. Auramine is a neuro toxic poison which causes central nervous system (CNS) depression.[14] It is locally known as "saani powder" in Tamil Nadu. In our study it's found to be suicidal consumption of saani powder in most of the cases as it is easily available at home. Next common is the OPC poisoning with 22 cases which was similar to a study done in Kathmandu where 19.5% cases were recorded due to OPC poisoning.[15] Organophosphate compounds (OPCs), are most commonly used among them and are gradually increasing cause of accidental and suicidal poisoning, with high morbidity and mortality rates, especially in developing countries. Also considerable amount of rat killer poisoning (17 cases) indicating their easy availability in homes and has increased morbidity due to non-availability of specific antidote. WHO conservatively estimated that though developing countries account for only 15% of the worldwide use of pesticides, about 50% of pesticide poisonings occur in these countries, especially through misuse of chemicals.[16] Females were more commonly affected (60%) similar to the study done in West Bengal[17] and also the increased incidence in housewives(33%) shows factors like dowry, cruelty by the in-laws, family quarrels, maladjustment in married life and dependence of women on husband are responsible for the higher incidence of poisoning among house wives. This was contradictory to a study done in Warangal where male outnumbered females.[18] Students were the second most commonly affected (22%) coinciding with the highest incidence of 63 cases in the age group of 16-30 years similar to a study done in Tribhuvan Hospital where 32% cases occurred in the younger age group.[19] Failure in the exams or inability to cope up the high expectation from parents and teachers has increased the incidence of poisoning among students. The distribution pattern shows the mental vulnerability and impulsiveness of our youth. Violence, loss, abuse, mental illness and pressure from cultural and social backgrounds could be the possible risk factors. The time interval between the intake of poisoning and attendance by medical staff was in the range of 1-6 hrs in most of the poisoning cases (45.38%) in our study. Similar results were observed in the study conducted in southern India which indicated that the average time lapsed was 3-6 hours.[20] This is important because the first hour in the management of poisoning is crucial to reverse its effects and avoid systemic complications and also most of the snake bite cases occurring in rural population resort to local healers than coming to hospitals. The time at which poisonings occur is crucial to find which population gets affected-as 48 cases occurred during 8am to 4pm which may be

the time of housewives consuming poison as they will be lonely or more stress from their in-laws. The maximum number (70 cases) occurred after 4pm where poisoning in children and animal bite poisonings come into the fore. The possible reason for the peak seen in children could be increased outdoor activity, putting objects into mouth by curiosity and consumption of unknown liquids carelessly kept in uncapped bottles.[21] This could also explain the paracetamol poisoning of 7 cases which is commonly prescribed to children and also to their sweet taste due to sugar coating. The snake bite cases occurred mostly during the evening after 6pm similar to a study in Bengaluru.[22] The duration of hospitalization was less than 5 days in majority of cases (106 cases) similar to a study done by Kiran et.al where the average duration of hospitalization is 3-7 days[23] which reflects on the high quality and standard of care given in tertiary care hospitals which the rural population lacks as they take time to reach tertiary hospitals which increases the complications leading to increased morbidity and mortality. Certain trace poisons like paraquat (4 cases), harpic liquid (3 cases) benzodiazepenes (3 cases), thyroid tablet, alprazolam (1 case each) have also been reported. Insecticide and pesticide poisonings are also found in fewer number of cases. Presence of unknown poisoning(2 cases) makes treatment difficult leads to development of systemic effects which warrants a need of some advance laboratory support which can identify this type of unknown substance which can help in emergency management of patient. Poison prevention strategies should be implemented at various levels such as strict implementation of pesticide act, so that import, manufacture, sale, transport, distribution and use of pesticides can be under the supervision of the government and controlling access to dangerous pesticides and follow secure storage practice.[24] There is an urgent need for strict implementation of the Pesticide Act, which regulates the import, manufacture, sale, transport, distribution and use of pesticides with a view to prevent risk to human beings.[25] Ban on cow dung powder sales in grocery shops should be followed by district authorities with strict penalties for those involved in selling this dangerous chemical. Also this study adds data to the existing information on poisoning which highlights the incidence in younger age group which in turn adds to the social burden of the country which should be addressed at the earliest.

CONCLUSION

Our study concludes that cow dung is the most common agent of poisoning followed by rat killer and OPC- all related to agricultural occupation. Potentially poisonous medicines must not be sold without prescription of registered medical practitioners. Similarly, the pesticides must be sold in the presence of a witness who should be known to the client. Health education to adolescents at school and college level about poisoning and its first aid treatment and strict implementation of anti-dowry law, marriage counselling and women empowerment will help in decreasing the day to day tension in married life and decrease the incidence of poisoning among house wives. If we consider the cost and outcomes of the poison cases reported to the hospital, it is recommended that, we should have to establish a poison information centre (PIC) which should be networked with other poison information centre in India and with developed countries which can help in identifying the poison and managing the cases along with a development of a National Guidelines for approach towards a patient with acute poisoning.

Fig. 1: Sex distribution

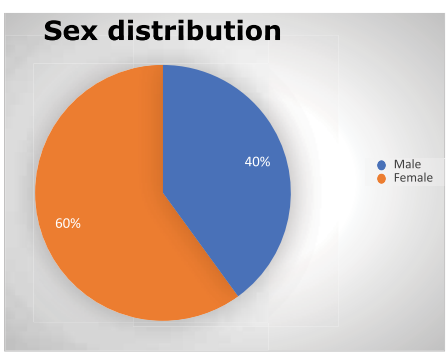
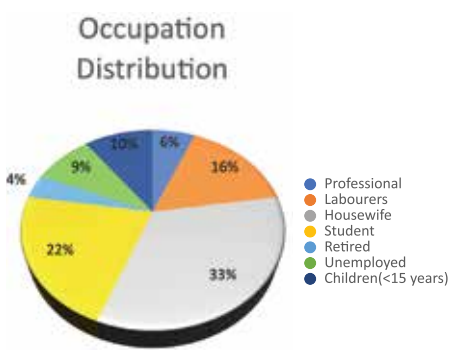


Fig. 2: Occupation distribution



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