

CLINICAL STUDY OF ACUTE POISONING: A RETROSPECTIVE STUDYPraveen Kumar¹, Kalpana Chandra², Amit Varshney³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: OBJECTIVES: To determine the common agents, clinical features and outcomes of acute poisoning. **MATERIALS AND METHODS:** A retrospective study of patients of acute poisoning of more than 14 years age admitted through emergency with a history of intentional, self-inflicted and suicidal poisoning in SRMS-IMS from Jan 2010 to Dec 2012. **RESULTS:** A total of 58 cases were included with a common age of affection 16 to 25 years and male to female ratio 1.63: 1. Poisoning cases occur throughout the year with maximum prevalence in May and minimum in June. Organophosphorus was the most common poison followed by aluminium phosphide. Vomiting was the most common symptoms followed by altered sensorium. 70.68% patients were discharged, 20.68% expired and 8.62% left against medical advice. Aluminium phosphide was the most common toxin consumed by dead patients. **CONCLUSION:** Acute poisoning is commonly affecting young population and is caused by variety of toxin. High mortality is associated with aluminum phosphide. **KEYWORDS:** Acute poisoning, clinical study of acute poisoning.

INTRODUCTION: Acute self-poisoning is a major public health issue around the world and in India.^[1] According to World Health Organization (WHO) estimates in 2004, 346,000 people died worldwide from unintentional poisoning of which 91% occurred in developing countries.^[2] Poisoning is the 4th most common cause of mortality in rural India.^[1] The exact incidence of poisoning remain uncertain in India but 1 to 1.5 million cases occur every year of which 50,000 succumb to it.^[1] Half of the poisoning is suicidal followed by one fourth of accidental and homicide.^[1] It is common in 20 to 30 years age group and rare after 65 years with a predominant affection to male.^[1] It has got predilection to literate, married and medium to low socioeconomic group.^[1] Aluminium phosphide is the most common poisoning in rural area and OPP in other area.^[1]

OBJECTIVES: The objectives of the study were to determine the common agents, clinical features and outcomes of acute poisoning.

MATERIALS AND METHODS: This is a retrospective study of patients of acute poisoning admitted through emergency in SRMS-IMS from Jan 2010 to Dec 2012. Data of the patients with acute, intentional, self-inflicting and suicidal poisoning of age more than 14 years were collected from medical records from record room. Complete history, clinical findings and investigations as in medical records were noted down. Identification of toxin was done by history, physical verification of toxin if available and by significant clinical signs.

RESULTS:

- 1) A total of 58 cases were included in the study admitted from January 2010 to December 2012.
- 2) Out of 58, 36 were males and 22 were females with M: F = 1.63:1. (Fig – 1).

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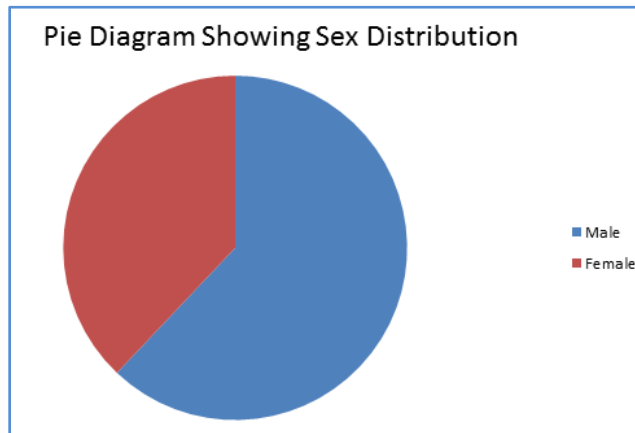


FIG. 1

- 3) They were in the age group of 16 to 65 years with a mean age of 25.79 and majority was in the age range of 16 to 25 years. (Table-1)

| Age range | Frequency |
|-----------|-------------|
| 16 – 25 | 34 (58.62%) |
| 26 – 35 | 18 (31.03%) |
| 36 – 45 | 4 (6.89%) |
| 46 – 55 | 1 (1.72%) |
| 56 – 65 | 1 (1.72%) |

Table 1: AGE WISE DISTRIBUTION

- 4) Poisoning cases occur throughout year with maximum prevalence in May and minimum in June (Table-2).

| Month | Frequency |
|-----------|------------|
| January | 7(12.06%) |
| February | 7(12.06%) |
| March | 3(5.17%) |
| April | 8((13.79%) |
| May | 11(18.96%) |
| June | 0(0 %) |
| July | 4(6.89%) |
| August | 9(15.51%) |
| September | 5(8.62%) |
| October | 1(1.72%) |
| November | 2(3.44%) |
| December | 1(1.72%) |

TABLE 2: MONTH WISE DISTRIBUTION OF CASES

ORIGINAL ARTICLE

- 5) Organophosphorus was the most common poison followed by aluminium phosphide. Other poisons were insecticide (Miscellaneous), corrosive, rodenticide, opioids, alprazolam, sodium valproate and copper. In 6.89% cases poison was not identified. (Table – 3)

| Poison | Frequency |
|-----------------------------|------------|
| Organophosphorus | 20(34.48%) |
| Aluminium phosphide | 16(27.58%) |
| Insecticide (Miscellaneous) | 6(10.34%) |
| Corrosive | 5(8.62%) |
| Rodenticide | 3(5.17%) |
| Opioid | 1(1.72%) |
| Alprazolam | 1(1.72%) |
| Sodium valproate | 1(1.72%) |
| Copper | 1(1.72%) |
| Unknown | 4(6.89%) |

TABLE 3: VARIOUS TOXINS RESPONSIBLE FOR POISONING

- 6) Vomiting was the most common symptoms followed by altered sensorium. 47 patients were normotensive and 11 were hypotensive at the time of admission. 12 patients were having abnormal liver function test and 4 patients were having abnormal renal function test. (Table-4)

| S. N. | Symptom | Frequency |
|-------|------------------------------|------------------------------|
| 1 | Vomiting | 30 |
| 2 | Altered sensorium | 9 |
| 3 | Diarrhoea | 3 |
| 4 | Abdominal pain | 2 |
| 5 | Dyspnoea | 1 |
| 6 | Normotensive | 47 |
| 7 | Hypotensive | 11 |
| 8 | Abnormal renal function test | 4 |
| 9 | Abnormal liver function test | 12 (Commonly high SGOT/SGPT) |

TABLE 4: CLINICAL FEATURES AND ABNORMAL LABORATORY PARAMETERS

- 7) Ventilatory support was required in 9(15.51%) patients.
- 8) 70.68% patients were discharged, 20.68% expired and 8.62% left against medical advice.(Table-5)

| S. N. | Out come | Variable |
|-------|-----------|------------|
| 1 | Discharge | 41(70.68%) |
| 2 | Death | 12(20.68%) |
| 3 | LAMA | 5(8.62%) |

TABLE 5: OUTCOME

ORIGINAL ARTICLE

- 9) 32.75% consulted doctor within 4 hours whereas 27.58% in 5-12 hours and remaining 39.65% after 12 hours. (Table - 6)

| S. N. | Time lag | Frequency |
|-------|------------|------------|
| 1 | <4 hours | 19(32.75%) |
| 2 | 5-12 hours | 16(27.58%) |
| 3 | >12 | 23(39.65%) |

TABLE 6: TIME LAG IN AVAILING MEDICAL CARE

- 10) 12 patients expired. Out of which 7 were males and 5 were females. They were commonly in 16-25 age groups. 41.66% availed medical services after 12 hours. 66.66% were hypotensive. 50.00% were having abnormal LFT. 25% were having abnormal RFT. 41.66% patients were given ventilator care. Aluminium phosphide was the most common toxin consumed by dead patients (Table – 7, 8, 9).

| S.N. | Age range | Frequency |
|------|-----------|------------|
| 1 | 16-25 | 7 (58.33%) |
| 2 | 26-35 | 2 (16.66%) |
| 3 | 36-45 | 3 (25%) |

TABLE 7: AGE VARIABLE IN DEAD PATIENTS

| S. N. | Time lag | Frequency |
|-------|----------|------------|
| 1 | <4 | 2(16.66%) |
| 2 | 5-12 | 3(25.00%) |
| 3 | >12 | 5((41.66%) |

TABLE 8: TIME LAG IN AVAILING MEDICAL FACILITIES IN DEAD PATIENTS

| S. N. | Poison | Frequency |
|-------|----------------------------|-----------|
| 1 | Aluminium phosphide | 6(50.00%) |
| 2 | Corrosive | 1(8.33%) |
| 3 | OPP | 1(8.33%) |
| 4 | Insecticide(Miscellaneous) | 1(8.33%) |
| 5 | Copper | 1(8.33%) |
| 6 | Rodenticide | 1(8.33%) |
| 7 | Unknown | 1(8.33%) |

TABLE 9: TOXIN USED BY DEAD PATIENTS

DISCUSSION: The study was conducted on 58 patients admitted in SRMS-IMS, Bhojipura, Bareilly. This was a retrospective observational study. In present study males were affected more commonly compared to females with M: F ratio 1.63: 1. Similar observation of more common affection of male

ORIGINAL ARTICLE

was made by de Miguel-Bouzas JC et al (66% male affection).^[3] Malangu N observed equal affection of male and female.^[4] But in contrast to this many observed female preponderance like Mohammad Abdollahi et al.(1.8:1),^[5] Exiara et al.(F: M = 1.56: 1),^[6] Mert et al. (F:M = 1.26:1),^[7] Islambulchilar M et al.(F:M = 1.2:1),^[8] YC Chan et al. (F:M = 1.49:1)^[9] and Afshari R et al.(F:M = 1.13:1).^[10] Few authors like Baydin A et al. (F:M = 2:1)^[11], Seydaoglu G et al.(F:M = 2.0:1)^[12] and Tufekci IB et al (F:M = 2.68:1)^[13] observed two times or more affections in females. Banerjee I et al. who conducted study in India also observed clear common affection in females.^[14]

In present study age of affection ranges from 16 to 65 years with a mean age of 25.79 and majority were in the age group of 16 to 25 years. Similar finding was observed by Baydin A et al. with mean ages of female and male patients were 28.8+/-12.9 years and 35.1+/-15.4 years respectively, and majority of patients (46.9%) were between the ages of 16 and 25 years.^[11] Cengiz M et al. observed a mean age of 26 +/- 9 years and the majority of the patients (56.9%) were 15-24 years of ages.^[15] Mean age of affection in other studies were 35.6 ± 17.6 years by de Miguel-Bouzas JC et al.,^[3] 33 years (STD+/-18.10) by Burillo-Putze G et al.^[16] and 37.1 for male and 33.4 for female by Exiara et al.^[6] Seydaoglu G et al. observed mean age 29.3 +/- 13.2 for males and 23.8 +/- 9.6 for females.^[12] Tufekci IB et al. observed mean age 27+/-12 years (age range 15-87) and the majority of the patients (73.94%) were below the age of 30 years.^[13] Khan et al. observed poisoning more commonly in rural population (76.9%) and 46.35% patients were in 20-30 years age group.^[17] So, in almost all study maximum prevalence of poisoning is in young adults.

In this study poisoning cases occur throughout year with maximum prevalence in May and minimum in June. Exiara T et al. observed peak incidence of poisoning in summer and June being the month with the highest incidence.^[6] Baydin A had similar observation with peak incidence in the summer months (35.4%)^[11] while Islambulchilar M et al. observed peak incidence of poisoning in spring (28%) and a bit lower incidence in summer (27.5%).^[8] Tufekci IB et al. observed peak in summer (31.7%) and winter (30.9%) and lower numbers in spring (22.9%) and autumn (14.5%).^[13] So, in various study poisoning occur uniformly throughout year with minor seasonal variation. The minor variation observed here might be associated with easy availability of toxin in particular season for agricultural or other commercial activities.

In this study 32.75% consulted doctor within 4 hours, 27.58% in 5-12 hours and remaining 39.65% after 12 hours whereas Mert et al. observed 67.7% of the cases presented to the emergency department within 3 hours of poisoning.^[7] So, in my study 67.23% cases consulted doctor after 4 hours limiting the benefit of decontamination therapy, an important management option in poisoning cases.

We found organophosphorus as the most common poison followed by aluminium phosphide, insecticides (Miscellaneous), corrosive, rodenticide, opioids, alprazolam, sodium valproate and copper. In 6.89% cases poison was not identified. Khan et al. observed organophosphorus in 63.9% cases followed by benzodiazepine in 6.8% cases.^[17] Banerjee I et al. observed snakebite (31.90%) as the most common cause of poisoning followed by organophosphorus compounds (21.84%), rodenticide (16.49%), alcohol (13.80%), chemicals (9.04%), and drugs (2.3%).^[14]

Mohammad Abdollahi et al. observed benzodiazepines (24.5%) as the most frequent, followed by antidepressants (20.5%) and analgesics (18%). Organophosphate insecticides were responsible for 57% of total pesticide poisoning cases.^[5] de Miguel-Bouzas JC et al. observed drug abuse as the most common toxic agent and ethyl alcohol accounting for 61% of these cases^[3] whereas

ORIGINAL ARTICLE

Baydin A et al. observed medicinal drugs to be the primary cause (60.5%) of poisoning and tricyclic antidepressants as the most frequent agents (36.3%).^[11]

Cengiz M et al. also observed medical drugs overdose as the major cause of (51.2%) intoxication which includes benzodiazepines, antidepressants and analgesics which was followed by agricultural chemicals (37.2%).^[15] Exiara et al. observed psychotropes as a leading cause of poisoning in patients with a psychiatric disease (74.1%) and analgesics in all the other patients groups (34.8%).^[6] Seydaolu G et al. also observed psychoactive drugs as the most frequent cause of poisoning (59.0%) followed by pesticides (26.4%).^[12] YC Chan et al. observed sleeping pills (24%) and analgesics (18%) were the most commonly used drugs and paracetamol was the commonest single ingredient involved in poisoning.^[9] Afshari R et al. observed pharmaceuticals agent (61.4%) as the commonest toxins followed by chemicals (22.8%), and natural toxins (16.6%).^[10] Hence wide variations have been observed in type of toxin consumed by different population worldwide in various studies. But in my study pesticides are common toxins responsible for poisoning because of location of hospital in rural area and agriculture as a main occupation among patient consulting this hospital.

In our study vomiting was the most common symptoms in 30 cases followed by altered sensorium in 9, diarrhoea in 3, abdominal pain in 2 and dyspnoea in 1. Normal blood pressure was observed in 47 patients and 11 were having hypotension at the time of admission. 12 patients were having abnormal liver function test and 4 patients were having abnormal renal function test. Ventilatory support was required in 9(15.51%) patients. So, symptoms were normally gastrointestinal and mild in majority of patients. Exiara T et al. observed good general condition of patient on arrival and serious symptoms (e.g. unconsciousness, insufficient ventilation necessitating intubation, aspiration, convulsions or hypotension) occurred in 15% of cases.^[6] Banerjee I et al. observed the mean GCS (Glasgow Coma Scale) score of the poisoned patients at presentation was 6.85 ± 1.62 .^[14]

In this study 70.68% patients were discharged, 20.68% expired and 8.62% left against medical advice. Out of 12 patients expired 7 were males and 5 were females and were in 16-25 age groups. 41.66% availed medical services after 12 hours. 66.66% were hypotensive. 50.00% were having abnormal liver function test and 25% were having abnormal renal function test. 41.66% patients were given ventilator care. Aluminium phosphide was the most common toxin consumed by dead patients. Banerjee I et al. reported death in 16.24% patients.^[14] Cengiz M et al. found death in 5.8% cases,^[15] Mert et al. in 2.6% cases,^[7] Baydin A et al. in 1.85% cases^[11] Exiara T in 0.9 % patients^[6] and Burillo-Putze G et al. in 0.2% cases,^[16] Islambulchila M observed death in 2.3% of cases and found common cause of death was due to pesticides.^[8] Khan et al. observed death in 3.4% cases.^[17] Death observed by western worker was low as compared to ours.

In this study, aluminium phosphide poisoning occurred in 16 cases (27.58%) and was responsible for 6 deaths (50.00% of total cases and 37.5% of aluminium phosphide cases). Singh S et al. conducted a study on 195 patient of aluminium phosphide poisoning with mortality in 115 patients.^[18] Chugh SN et al. conducted a study on 418 patients with aluminium phosphide poisoning and observed 77.2% patient mortality.^[19] Katira R et al. conducted a study on 90 patients of aluminium phosphide poisoning with a mortality rate of 63.3%.^[20]

In my study organophosphorus poisoning was the most common poisoning contributing 20 cases (34.48%) but is responsible for 1 death (8.33%). Hrabetz H et al. conducted a study on 33 patients with OPP with moderate to severe poisoning and observed recovery in 28 patients and death

ORIGINAL ARTICLE

in 5 patients.^[21] Banerjee I et al. observed death in 5.78% cases.^[22] Yurumez Y et al. conducted a study on 220 patients of OPP and observed twenty patients (9.1%) died due to sudden respiratory and cardiac arrest (45%), respiratory failure (25%), CNS depression (5%) and septic shock (25%).^[23]

Higher number of total death in my study is related to higher prevalence of pesticide poisoning especially significant number of patients consuming aluminium phosphide and delay in consulting hospital.

CONCLUSION: Acute poisoning is an important preventable public health problem commonly affecting young population. Poison etiology is highly variable in different countries. Overall mortality is low besides high mortality with aluminum phosphide.

ABBREVIATION:

- WHO – World Health Organization.
- OPP – Organophosphorus Poisoning.
- LAMA – Left Against Medical Advice.
- GCS – Glasgow Coma Scale.
- RFT – Renal Function Test.
- LFT – Liver Function Test.

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ORIGINAL ARTICLE

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