

Drug utilization pattern of acute poisoning admissions in medicine intensive care unit

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Abstract

Introduction: Acute poisoning is a very common & life threatening crisis and leads to serious conditions and even death of patients. Poisoning may be due to self consumption or accidental of various chemical compounds, medications and poisonous animals. The various drugs used in poisoning and their clinical outcome with different poisoning substances was investigated in this study

Material and Methods: The patients which have been diagnosed with acute poisoning in Medical intensive care unit from January 2017 to July 2017 are included in this study.

Results: During 7 months of study total 154 patients of acute poisoning were included in this study. Male patients were 111 (72%) while female patients were 43 (28%). Mean age of patients was 34.97 ± 14.46 years. The commonest cause of poisoning was by use of pesticides followed by venomous snake bite. Drugs prescribed to patients were mainly symptomatic like H2 blockers (99.3%), antiemetics (97.4%), and antimicrobials (90.2%). Specific antidotes prescribed were Atropine (92.8%), pralidoxime (79.8%) and anti-snake venom (17.5%)

Conclusions: Organophosphorus compounds were the most common among poisons, followed by Snake bite. Gastroprotective and antiemetic drugs are most commonly prescribed drugs.

Keywords: Poisoning, Drug utilization, Intensive care unit.

Introduction

Poisoning is defined as the occurrence of harmful effects resulting from exposure to a foreign chemical or a xenobiotic, it can occur by means of ingestion, inhalation or contact; unintentionally or intentionally.^{1,2} Acute poisoning is a single or repeated exposure of poisoning agents for limited time duration. Poisoning may be due to self-consumption or accidental of various chemical compounds, medications and poisonous animals.³ Most common causes for emergency admissions which leads to mortality are due to acute poisoning and venomous snake bites in various nations.⁴ The nature of poison varies according to region and also differs in same country relating to cultural diversity and various other factors.⁵ Early diagnosis, treatment and prevention are the only measure through which this problem can be solved.^{6,7} As poisoning is very common and major public health issue the hospital services receives lot of strain and the victims have to face a great financial burden. According to the national annual report of India in 2015, death due to acute poisoning was 26173. The data showed that 39.1% of all causes of other causes of deaths in the year 2015 was due to accidental poisoning. Around 27.9 % of suicidal deaths was due to poison ingestion during 2015.⁸

Drug utilization studies (DUS) is "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social and economic consequences".⁹ By use of drug utilization studies we can analyze the health care systems, also they are powerful exploratory tools to know the role of drugs in the society. They help in making decisions in socio-

medical and financial basis for the health care systems. Due to various varieties of different acute diseases, which are admitted in Intensive care unit it, becomes an ideal center to study the prescription pattern of various drugs.⁴ The treatment received by patients of acute poisoning depends upon the availability of antidotes, essential drugs & emergency protocols. Therefore, every institution must regularly evaluate drug utilization in different departments and their protocols to improve rationalization of drugs.¹⁰

Therefore, we designed this study to know prescription pattern, different poisoning agents and their clinical outcome in patients with acute poisoning admissions at a tertiary care teaching hospital.

Materials and Methods

A retrospective study was conducted from January 2017 to July 2017 in the Medical intensive care unit of tertiary care hospital.

Study criteria

Inclusion criteria

1. Patients admitted in intensive care unit with diagnosis of acute poisoning.
2. Patients of either sex

Exclusion criteria

1. Patients with incomplete case papers were excluded
2. Other types of poisoning like food & drugs were not included

Approval from ethics committee was taken. Data collected was of age, duration in ICU, final diagnosis, drugs prescribed and clinical outcome of patients from case papers.

The data obtained was then analyzed in Microsoft excel. Qualitative data are expressed in frequency & percentage while quantitative data are expressed with mean \pm standard deviation (SD)

Results

Total 154 patients of acute poisoning were treated. Male patients were 111 (72%) while female patients were 43 (28%). Mean age of patients was 34.97 ± 14.46 years. Mean duration of ICU stay was 6.2 ± 4.2 days. (Fig.no.1) Out of 154 cases 106 were transferred to ward,

47 were expired and 1 was discharged against medical advice (DAMA) (Fig. no.2) (Tableno.1). Most common route of exposure was by ingestion of poisons (82.4%) followed by dermal exposure (17.5 %). The commonest cause of poisoning was by use of pesticides followed by venomous snake bite. Drugs prescribed to patients were mainly symptomatic like H2 blockers (99.3%), antiemetics (97.4%), and antimicrobials (90.2%) (Fig.no.3). Specific antidotes prescribed were Atropine (92.8%), pralidoxime (79.8%) and anti-snake venom (17.5%)

Table 1: Demographic, Reason & Outcome

Demographic	Frequency (%) (n=154)
Male	111 (72%)
Female	43 (28%)
Age (Mean \pm SD)	34.97 ± 14.46 years
Reason	
Accidental	36 (23.3%)
Suicidal	118 (76.6%)
Length of Hospital Stay (Mean \pm SD)	6.2 ± 4.2 days
Outcome	
Transferred to ward	106 (69%)
DAMA	1
Expired	47 (30%)

Table 2: Various drugs utilized

Treatment	Frequency (%) (n=154)
Atropine sulfate	92.80%
Pralidoxime	79.80%
Anti-snake venom	17.50%
Neostigmine	12.30%
Gastroprotective	99.30%
Antiemetics	97.40%
Antimicrobials	90.20%
Midazolam	18.10%
Lorazepam	5.80%
Vitamin K	0.06%
Tramadol	5.10%
Hydrocortisone	13.60%
Tetanus Toxoid	13.60%
Flanzen	5.10%
Lignocaine liquid	1.90%
Sucalfate syrup	1.90%

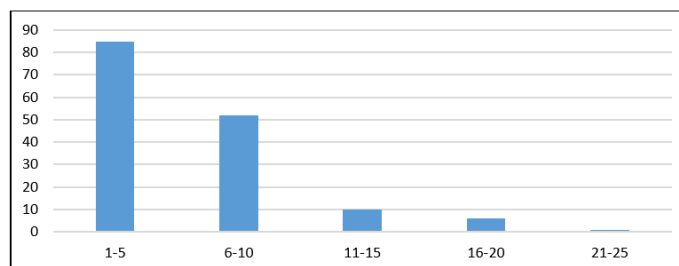


Fig. 1: Total Duration of Stay (Days)

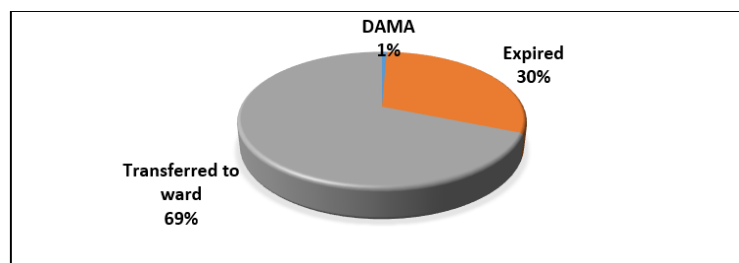


Fig. 2: Outcome in Patients

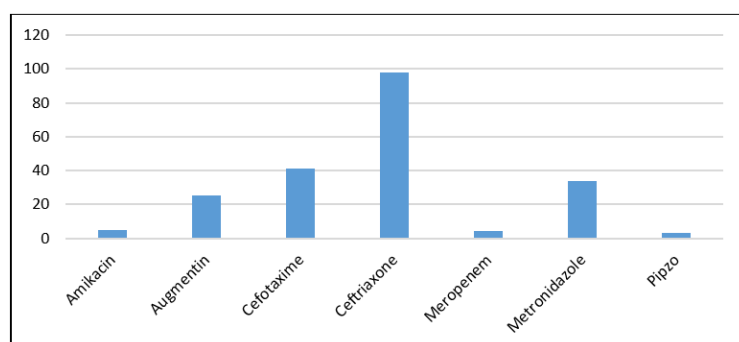


Fig. 3: Various Antibiotics utilized

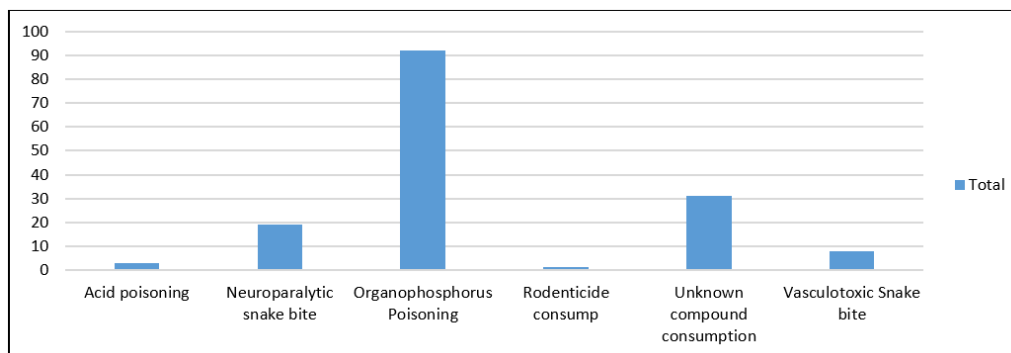


Fig. 4: Diagnosis

Discussion

Acute Poisoning is upcoming medical & social problem now days everywhere in the world. Due to which there arises serious health issues, mortality, and burden on health services.^{2,11}

In this study, a male predominance was observed which the similar pattern is observed by other studies in India.^{1, 12-14} This trend may be due to increased occupational hazard and exposure of men to stress being the earning members compared to women. Majority of cases in this study are aged between 15-50 years, which is similar to the other Indian studies, and the reasons behind are mostly due to domestic, educational and employment related stress. Patients who consumed the poisoned with suicidal intent were 77% and those who were exposed accidentally were 23%.⁴

Poisoning and Snake bite persist to stay a major health problem in the current study. The most common type of poisoning was by consumption of pesticides, as they are readily available among farmers and

households. After pesticides poisoning, snake bite is most common by both neurotoxic as well as vasculotoxic snakes.¹⁵ Organophosphorus compounds are common among the pesticides and their treatment included mainly Atropine and Oximes.^{16, 17}

Snake bite is a very serious but neglected public issue in various countries which affect mainly the rural population. In India, snake bites take a heavy toll of human lives, and therefore warrant urgent attention. Snake bite cases accounted for 17.5% of the present study population. In the present study, polyvalent anti-snake venom (ASV) was administered in all cases of snake poisoning. Neostigmine with alternate doses of Atropine were administered IV to improve respiratory muscles weakness in neurotoxic snake bites. In addition, Tetanus toxoid injection was given to 13.6% along with Tramadol and Serratiopeptidase.

The Symptomatic treatment mainly involved usage of Gastroprotective agents like H₂ blockers, antiemetic which were observed in other studies too.^{10, 18}

Antimicrobials were prescribed to 90.2% patients and most used were Cephalosporins, followed by Metronidazole.^{19,20} In intensive care unit broad spectrum antibiotics are given as empirical therapy. Over estimation of the severity of illness may be the main reason for such an empirical use of antimicrobials in intensive care unit.

Conclusion

Organophosphorus compounds were the most common among poisons, followed by Snake bite. Gastroprotective, antiemetic drugs, while antidotes like Atropine, PRAM and ASV are most commonly prescribed drugs. More studies should be encouraged in different hospital settings and geographical areas to study the pattern of poisoning, its morbidity, and mortality. A long-term prospective study is needed in case of poisoning for understanding the clinical pattern and management techniques, which can help in intervention for a better outcome. Establishment of a poison center within the region also will facilitate in preventing and controlling such poisoning events.

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