



Epidemiology, Clinical Profile and Immediate Outcome of Poisoning in Children in Tertiary Care Hospital

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Received: November 26, 2020

Published: December 15, 2020

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Abstract

Background and Objectives: Poisoning in pediatric age group is one of the most common emergencies encountered in pediatric practice. Poisoning in children are mostly accidental, and most cases are preventable. Surge in incidence of acute poisoning episodes are attributable to increased use of various chemical substances in households.

Objectives: To ascertain the epidemiology, clinical profile and immediate end result of children presented to PICU with acute poisoning in a tertiary care hospitals attached to JJMMC Davangere.

Materials and Methods: The study was an observational study conducted over a period of 1 year from December 1st 2017 to December 1st 2018 with 273 cases of poisoning in paediatric age group. Target populations were Children with poison intake history of with or without clinical features, with uncertain history of poisoning but with clinical features of acute poisoning. Relevant investigations were done whenever required. All the cases were managed according the latest standard guidelines. Data was tabulated and statistically analyzed.

Results and Interpretation: Out of 273 patients admitted 113 cases (41.39%) belonged to age group between 1 to 6 years of age. where males (141) outnumbered females (132). A total of 183 cases (67.03%) were due to accidental poisoning, 77 cases (28.20%) due to suicidal and 13 cases (4.76%) were due to homicidal poisoning. Out of all major toxic agents involved, hydrocarbons (144, 52.74%) were consumed among major number of children reported. Maximum i.e. 119 cases were due to kerosene poisoning followed by 56 cases due to OP compounds. Most common symptoms observed were vomiting in 203 patients followed by respiratory distress in 107 patients and altered sensorium was observed in 77 patients. Out of 273 poisoning cases, total mortality had been reported in 11 patients (4.02%), Out of 11 cases mortality due to OP compounds stand highest (5, 45.45%).

Conclusion: Parental awareness and education plays vital role in obviating the accidental poisoning in children.

Keywords: Poisoning; Kerosene; Accidental; Hydrocarbons; Vomiting; Altered Sensorium

Abbreviations

WHO: World Health Organization; PICU: Pediatric Intensive Care Unit; ECG: Echocardiography; LFT: Liver Function Test; RFT: Renal Function Test; ABG: Arterial Blood Glass; OP: Organo Phosphate; MAO: Monoamine Oxidase; DDT: Dichlorodiphenyltrichloroethane; EEG: Electroencephalogram; BUN: Blood Urea Nitrogen; ABCD: Airway, Breathing, Circulation, Disability; HCN: Hydrogen Cyanide; BAL: British Anti-lewisite; EDTA: Ethylene Diaminetetraacetic Acid; GCS: Glasgow Coma Scale.

Introduction

Increasing morbidity and mortality due to acute poisoning in children is a serious emerging challenge to pediatricians. Poisoning in children are mostly accidental and are preventable [1]. Poisonous substances accidentally consumed orally contributes to majority of cases and further supplemented by keeping toxic substances in drinking water bottle or food containers which are often mistaken by children [2,3].

Environmental elements and variety of population, play a role in accidental poisoning. According to WHO reported incidence of childhood poisoning in various studies varies from 0.3% to 7%, and this contributes to a remarkable number of admissions to the PICU. Bapuji Child Health Institute and Research Center, Davangere is a Tertiary care hospital and poisoning in children accounts to 5-6% of PICU admissions annually.

Objectives

To ascertain the epidemiology, clinical profile and immediate end result of children presented to PICU with acute poisoning in a tertiary care hospitals attached to JJMMC Davangere.

Methodology

Source of data

The present study was conducted on children upto 18 years of age admitted in tertiary care hospitals attached to JJMMC, between December 1st 2017 to December 1st 2018 with acute poisoning.

- Bapuji Child Health Institute and Research Center, Davangere.
- Chigateri general hospital, Davangere.

Method of collection of data

- Study period: 1 year (December 1st 2017 to December 1st 2018)
- Study design: Observational study
- Sample size: 273.

Inclusion criteria

- All children and adolescents admitted with the history of accidental/intentional poisoning to Pediatric intensive care unit of Bapuji Child Health Institute and Research Center.
- Patients with age group of 1 to 18 years
- Patients who give consent for the study

Exclusion criteria

- Patients with food poisoning
- Patients with idiosyncratic reactions to drugs
- Patients with animal bites, Snake and Scorpion envenomation.
- Patients who doesn't give consent for the study.

Methods

The present study was an observational study conducted over a period of 1 year from December 1st 2017 to December 1st 2018.

Children with poison intake history of with or without clinical features, with uncertain history of poisoning but with clinical features of acute poisoning.

Children with uncertain history of food poisoning and distinctive reactions to drugs were excluded from the study. In case of intoxication data regarding patient ,details related to poisoning ,clinical profile were documented systematically. Relevant investigations were done whenever required.

Results

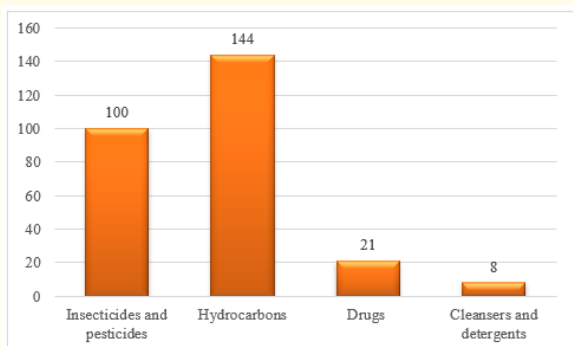
The current observational study with a total of 273 Children with poison intake history of with or without clinical features, with uncertain history of poisoning but with clinical features of acute poisoning were considered for statistical analysis. Out of all major toxic agents involved, Majority children i.e. 144 cases reported to hospital were reported with consumption of hydrocarbons (52.74%) followed by 100 cases reported with consumption of insecticides and pesticides (36.63%), 21 patients were reported with ingestion of drugs (7.69%) and 8 patients consumed cleansers and detergents (2.93%). Among insecticides and pesticides, 56 patients consumed OP compounds and constituted maximum number (56.00%) of cases followed by 29 cases with pyrethroids consumption (29.00%). Out of 273 poisoning cases, the mortality had been reported in 11 patients (4.02%). Out of 11 cases mortality due to OP compounds is 5 constituting 45.45% of mortality.

Discussion

Poisoning in pediatric patients is a noteworthy cause of morbidity and mortality in India. It is responsible for 0.38% to 7.8% of total admissions in PICU at various hospitals across India. The inquisitive nature of toddlers makes them susceptible for accidental poisoning. The extent of contribution of childhood poisoning to total admission differs among institutions. In our present study population of 273, 113 cases (41.39%) belong to age group between 1 to 6 years of age which was similar to studies done by Kohli, *et al.* [4], Bhat, *et al.* [5] and Ratigeri, *et al.* [6]. Bandyopadhyay, *et al.* [7] stated that poisoning among children were common between 12 to 18 years of age. This greater incidence of unintentional poisoning has been explained by inquisitive nature of toddlers with rapid neurological development [8-10]. Like many other studies all over the world ,the present study also showed increased male preponderance.

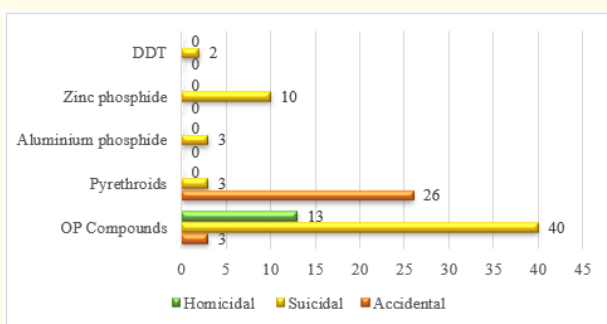
Out of 273 poisoning cases, 183 cases (67.03%) were due to accidental poisoning, 77 cases (28.20%) due to suicidal and 13 cases

(4.76%) were due to homicidal poisoning. Out of all major toxic agents involved, hydrocarbons (144 Cases) was consumed by majority and constituted 52.74% of children reported to our hospital followed by insecticides and pesticides (100 Cases) constituting 36.63%, drugs (21 cases) constituting 7.69% and cleansers and detergents (8 Cases) constituted 2.93%.



Graph 1: Distribution of patients according to major toxic agents involved.

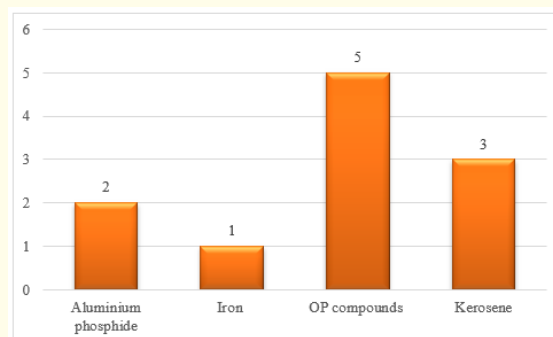
Among insecticides and pesticides, OP compounds were consumed by the maximum number (56) of cases 56% followed by pyrethroids (29) constituting, 29.00%. Among hydrocarbons, kerosene (119 cases, 82.63%) were consumed by the maximum number of cases followed by paint thinner (19 Cases, 13.19%).



Graph 2: Distribution of insecticides and pesticides poisoning patients according to the mode of poisoning.

In our study, the most common symptoms observed in patients were vomiting was observed in 203 patients (74.35%) followed by respiratory distress in 107 patients (39.19%) and altered sensorium in 77 patients (8.20%). Kohli U, *et al.* reported that ap-

proximately two thirds of their patients developed symptoms after poison ingestion that ranged from trivial to severe and life threatening; the remaining one third were asymptomatic. The common symptoms noted in decreasing order of frequency were vomiting, altered sensorium, respiratory distress and seizure. In contrast to reports from the developed countries, the majority (68.4%) of patients required hospitalization, and only one third of patients could be discharged after 6 hours of observation. Out of 273 poisoning cases, the mortality had been reported in 11 patients (4.02%) among our study population. Out of 11 cases expired, the mortality due to OP compounds stand highest (45.45%).



Graph 3: Mortality among the poisoning patients in our study population.

A telephonic consultation with the National Poisons Information Centre (NPIC), which is located at our centre, is obtained for all our poisoning patients after initial stabilization in the paediatric emergency room. This standard practice could account for the observation that none of our patients received any inappropriate intervention or therapy (e.g., gastric lavage for kerosene poisoning or lavage after more than 2 hours of poison ingestion).

While kerosene still remains the single most important cause of poisoning in our patients, no deaths were reported. Our findings concur with the findings reported in this study, with approximately 41.39% of our patients in this age group. The data from another large north Indian centre published about a decade ago suggested kerosene poisoning to be responsible for more than half of the paediatric poisonings. Our results suggest that kerosene poisoning, though decreasing in prevalence, still remains the single most important cause of paediatric poisoning in our population. In contrast to previous reports, our results show a worrisome increase in poisoning due to drugs.

Conclusion

Irrespective of the rapid socioeconomic development in our country, the trends for pediatric poisoning have not changed over the years. In contrast to developed countries, where the larger number of poisonings are due to common non-toxic household products, 15.01% patients do not develop symptoms, and up to three fourths of the symptomatic patients are discharged after a brief period of observation in the emergency ward, the most of our patients required hospitalization because of severe symptoms related to dangerous nature of toxins ingested. Most of our patients improved with conservative management highlighting the important role of good supportive care in the management of poisoned patients.

Parental awareness and education plays vital role in obviating the accidental poisoning in children.

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