Retrospective Study of Acute Pediatric Intoxication Cases by Household Products Presented to the Poison Control Center of Ain-Shams University Hospitals

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Abstract

Background: Acute poisoning in children is a crucial pediatric emergency and may be a worldwide problem. This study aims to acknowledge the incidence of acute poisoning by household products in children regarding demographic factors, common clinical presentation and outcome of management.

Methods: this is often a descriptive retrospective study conducted on patients admitted to the Poison Control Centre of Ain-Shams University Hospital. The duration of the study was one year, from the beginning of January, 2016 till the top of December, 2016. the entire number of cases was 846 cases collected and analyzed regarding the demographic data, condition of poisoning, common clinical presentation, and management plan. Data was analyzed using computer software package SPSS 15.

Results: a complete of 846 cases were reviewed, the varied age groups involved ranged from but one year to 18 years, with a mean age of 10.22 ± 6.83 years. Most cases were females (67 %), living in urban areas (52.4 %) and therefore the majority of cases were accidental (74 %). the foremost common offending agent was pesticides (71%). Most of the patients were vitally stable on admission and therefore the commonest clinical presentation was gastrointestinal symptoms (31.3%). Most of cases received medical treatment within the inpatient wards (80.5%) and (96.7%) improved while (3.3 %) died.

Conclusions: Acute poisoning by household products is common among adolescents and pre-school age children. Pesticides were liable for the bulk of cases. Supportive and symptomatic therapy is that the main method for treatment.

Keywords: *acute poisoning, children, household products, pesticides.*

Introduction

Acute poisoning is a common situation in the emergency departments (EDs) all over the world and involves high medical attention and significant costs.[1] Childhood poisoning is a significant public health problem and a preventable cause of morbidity and mortality.[2]

The most important difference between pediatric and adult poisoning is types of agents. In adults, higher percentages of poisoning cases are due to psychopharmacologic drugs (sedatives, tranquilizers and antidepressants), whereas in children, there is a much higher frequency of exposure to household items and personal care products and plants.[3]

Many studies indicated that a variety of social and demographic factors like family size, socioeconomic condition, attention to child as well as storage place of poison are important risk factors which significantly influence the acute household poisoning cases in children.[4]

Accidental poisoning has a strong age predilection. This problem is particularly common in toddler and

older children in the age group of 1-5 years. Children of this age group have increased tendency to eat or drink any object or substance due to strong oral orientations. They are also very keen to explore the environment.[5]

Materials and Methods

This is a descriptive retrospective study. Data of all acute toxicity cases by household products among children (total number of cases was 846), who were admitted to the Poison Control Centre of Ain-Shams University Hospital (PCC- ASUH) during one year study period, from January, 2016 to December, 2016 were collected and analyzed. Cases were categorized according to age, sex, residence, time of poison exposure, manner of toxicity, type of poison, presentations, management plan and final outcome of the cases. Patients were divided into 4 age groups; these are infancy (< 2 years), preschool age (2-6 years), school age (7-12 years) and adolescents (13-18 years). Residence of the patients was also classified into urban and rural areas. According to type of poison, the patients were also divided into 4 groups; these are pesticides group, cleaning and disinfectant products group, hydrocarbons group and miscellaneous group. General management steps (ABCs), Specific measures like decontamination, gastric lavage, administration of activated charcoal and antidotes were also recorded. Data was coded and entered using the statistical package for Social Sciences (SPSS version 15). The data were summarized using a descriptive frequency and percentage for quantitative values. Relation between data grouped was tested by *Chi-Square* test for quantitative variables. Statistical differences (P-values) less than or equal to 0.05 were considered statistically significant. Data was collected after obtaining consent from the chef of the PCC of ASUH and from the ethical committee of scientific research, Faculty of Medicine, Beni-Suef University.

Results

This study was conducted on 846 children. The various age groups involved ranged from less than one year to 18 years, with a mean age of 10.22 ± 6.83 years. The adolescent age group had the greatest representation (52.7 %), followed by pre-school age children (37.5 %), infants (6 %), and school age children (3.8 %) figure (1). Females were more common than males (67 %) figure (2). Most of children were living in urban areas (52.4 %).

As regard the type of agents involved, the pesticides group was the most common (71%) and was distributed as follows: rodenticides (66.4%), insecticides (33.6%). Followed by cleaning and disinfectant products group (18.9%) which was distributed as follows: bleaches (70%), sulfuric acid (15%), carbolic acid (6.2%) and flash (8.8%).Then the group of hydrocarbons (5.2%) showed that the cases of kerosene were 95.5% and those of other hydrocarbons were 4.5%. Lastly the miscellaneous group (4.9%) and was distributed as follows: cosmetics and personal care products were 92.7% and others were 7.3% figure (3).

Regarding the manner of toxicity, the majority of cases were accidental (74 %) while suicidal poisoning was in (26 %). Accidental poisoning was more common than suicidal among all age categories and was more common in males (85.7%) than females (68.3%) while suicidal poisoning was more common in females (31.7%) than males (14.3%). Suicidal cases were reported only during Adolescence table (1). It was found that all types of household products toxicity was more common in females than males except for hydrocarbons group; males were more common than females *(66%) Vs (34%)* table (2).

Regarding the clinical manifestation, the most common clinical presentation was gastrointestinal symptoms (31.3%) figure (4), neurological symptoms was in (22.3%) of patients, respiratory symptoms (10.8%), Cardiovascular symptoms (3.3 %), Multiple symptoms (5 %) and others (1.8 %).216 (25.5 %) patients were asymptomatic.

Most of the patients were vitally stable on admission and had normal serum sodium, potassium and blood glucose level at presentation time. However, hypokalemia was detected in (26.7 %) figure (5).

According to the place of admission, the study revealed that most patients received medical treatment in the inpatient wards (80.5%) followed by the intensive care unit and those observed in emergency department without admission (15.7% and 3.8%) respectively table (3).

Treatment of cases mainly depends on supportive and symptomatic treatment, elimination of the poison from the body and the use of antidote if available. For airway and breathing, oxygen was used in (4.8 %), endo-tracheal tube was inserted in (5 %) and only (3.4 %) of patients were put on mechanical ventilation. For circulation, majority of patients received IV fluids (97.3 %), steroids (11.7 %) and dopamine (0.9 %). For symptomatic ttt, antibiotics were used in (0.2 %), anti-emetics (56.8 %), H2 blockers (29 %), bicarbonate (8.9 %), sedative hypnotics (1.9 %) and epanutin (0.1 %).

Regarding GIT decontamination and the use of physiological antidote, Activated charcoal was used in (5 %) of patients and Gastric lavage (13.1 %). Antidotes were given to treat 42.2 % of cases. Atropine was the most common antidote used in 26.5 % of cases, Toxoguonin (15.4 %) and NAC (0.3 %).

Regarding the outcome of the patients, (96.7 %) improved when received medical treatment and discharged while (3.3 %) died. The highest mortality was in hydrocarbons group (9.1 %) followed by pesticides group (3.3 %) then cleaning & disinfectant products group (2.5 %).

Discussion

The demographic data of the present study revealed a highly significant increase within the incidence of acute poisoning by household products among patients in Adolescence period aged 13-18 years (52.7%) followed by Pre-school group aged 2-6 years (37.5%) an equivalent as observed in other studies.[6,2] the bulk of cases were females (67%), while males were (33%) this is often almost like other studies.[7] Children belonging to urban areas were more exposed (52.4%) compared to those in rural areas (47.6%) this might flow from to the very fact that mothers in populated area are busier in their jobs and resulting in neglect of their child during this area. The toxic agents can also be more available within the cities than within the rural areas.[8] this study indicated that the pesticides group was the foremost common explanation for poisoning (71%) followed by cleaning and disinfectant products group (18.9%) These results are approximately almost like other studies[9]. Regarding time of poisoning, most of poison cases were in evening (46 %) then afternoon (32 %) This agrees with other studies.[10,11] Accidental poisoning was more common than suicidal among all age categories while suicidal poisoning was more common in females (31.7%) than males (14.3%). These results agreed with other studies.[12] The bulk of patients were vitally stable. Gastrointestinal symptoms (vomiting, abdominal colic, diarrhea, dysphagia & hematemesis) were the foremost common symptoms (31.3%) followed by neurological symptoms (22.3%) These results are almost like previous study.[5] The majority of patients had normal sodium, potassium and blood sugar level. However, hypokalemia was detected in (26.7 %).[13] Most of patients received medical treatment within the inpatient wards (80.5%) followed by the medical care unit and people observed in emergency department without admission (15.7% and 3.8%) respectively.[14] activated carbon was utilized in (5 %) of patients and lavage (13.1 %). Antidotes got to treat 42.2 % of cases. Atropine was the foremost common antidote utilized in 26.5 % cases, Toxoguonin (15.4 %) and NAC (0.3 %) (15). while 28 (3.3 %) of our patients died, (96.7 %) improved when received medical treatment an equivalent as observed in other studies.[16]

Conclusion

Acute poisoning is a crucial explanation for emergency unit admissions. The incidence of poison exposure was highest among adolescents and pre-school age children. Intentional poisoning was more common in older girls and accidental poisoning was more common in younger boys. Pesticides and household cleansing products were liable for the bulk of cases of poison exposure. Gastrointestinal symptoms were the foremost common clinical presentations in acute toxicity by household products. In most of cases, treatment was non-specific, including general decontamination and supportive-symptomatic therapy. The utilization of physiological antidote is restricted to pesticides toxicity.

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Availability of data and materials Please contact author for data requests

Authors' contributions

All authors read and approved the final manuscript.

Ethics approval and consent to participate

Ethical approval was obtained from the chef of the poison control Centre of Ain-Shams University hospitals to collect the data from the archives of the patients' files in the Centre.

Consent for publication : Not applicable as no individual data, images or videos were included in the study.

Conflict of Interest: Nil

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