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ETIOLOGICAL AGENTS, RISK FACTORS AND OUTCOMES IN CHILDREN WITH ACUTE POISONING

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Abstract:
Aim: *The aim of this study is to determine the etiological agents, risk factors and outcomes in children with acute poisoning.*
Place and Duration: *In the Pediatric Unit-II of Nishtar Hospital Multan for six months duration from March 2020 to August 2020.*
Methods: *A total of 70 patients were included. Patients were followed until discharge. A Proforma form was completed and the results analyzed in the SPSS version 10 computer program. All subsequent poisoned patients who visited the Emergency Department meeting the inclusion criteria during the study period were enrolled. The mean age was 2.89 years, range 6 months to 10 years. The ratio of men to women was 1.5: 1.*
Results: *Kerosene was the most common agent, accounting for 50% of all cases, followed by pharmaceuticals (14.3%) and chemicals (12.9%). Storing kerosene in empty soda bottles and not properly storing medications are the most common risk factors identified. Oral ingestion was the most common route of poisoning. Most of the patients (84.3%) were discharged home without sequelae. Total mortality was 5.7%.*
Conclusion: *Most of the toxic substances that children have been exposed to are those stored in eatable containers, ie kerosene oil. A minority of children with accidental poisoning developed severe toxicity. Parents can prevent many of these accidents by identifying, properly storing and confining toxic materials.*
Keywords: *Poisoning, kerosene, pharmaceuticals, child*

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INTRODUCTION:

Poisoning can be defined as exposure of the victim to an agent that, through the transfer of chemical energy or radiation, may cause symptoms and signs of organ dysfunction leading to injury or death. Child poisoning is largely a random phenomenon and is common all over the world. It is an important health problem that carries significant costs, both financial and emotional. It is also the main goal of preventive and economical actions.

While there is a great deal of data on accidental poisoning of children in developed countries, the topic has not received sufficient attention in developing countries. The exact scale of the problem is difficult to quantify as few countries have a mechanism for collecting information on all cases and the data from different countries is not comparable. However, it seems that in developed countries there has been a downward trend in admissions due to accidental poisoning4. US Poisoning Centers received 5.4 million phone calls regarding potentially toxic exposure of children over 5 years; 61% of them concerned children aged 1-2 years5. Boys are at greater risk of accidental poisoning than girls.

Accidental poisoning in children is a common cause of presence in emergency departments. National Poisons Information Service (London) in 1999 Received 187,000 telephone reports, 32% of which related to accidental ingestion in children under 14 years of age. In the US, he is responsible for approximately 1.3 million consultations at poison centers. In the United States, out of 1,070,497 exposures reported in children less than 6 years of age, only 1.1% had moderate or major clinical signs of toxicity. This is related to about 2% of all deaths from childhood injuries in developed countries and about 5% in developing countries.

MATERIAL AND METHODS:

This study was held in the Pediatric Unit-II of Nishtar Hospital Multan for six months duration from March 2020 to August 2020. A total of 70 patients participated in the study. Cases were collected from patients admitted to the Emergency Department. All consecutive patients with poisoning who visited the emergency room during the study period were enrolled in the study and met the inclusion criteria.

Inclusion criteria: Patients with a specific history of poisoning admitted urgently with suspected accidental poisoning.

Exclusion criteria: children less than 1 month of age with diseases such as chronic encephopathies, neuropathies and delayed development.

RESULTS:

In the analyzed period, a total of 70 children with accidental poisoning were admitted. Most, 56 (80%) of them were aged 1-5 years, 3 (4.3%) were younger than 1 year, and 11 (15.7%) were over 5 years of age. Males constituted 60% and females 40%, with a male to female ratio of 1.5: 1. Due to etiological factors, kerosene was consumed by 35 (50%), pharmaceutical products by 10 (14.3%), and chemicals by 9 (12.9%) children. Poisoning with household products was found in 5 (7.1%) children, in 5 (7.1%) poisoning with insecticides / pesticides, and in 6 (8.6%) cases the type of factor remained undetermined. Regarding the outcome of these 70 children, 67 were discharged and only 3 died, and this difference was statistically significant ($p < 0.05$). Of these discharged children, 59 (84.3%) were discharged without sequelae; 27 (38.6%) from the emergency room within 24 hours of admission. 4 (5.7%) patients were discharged from home with sequelae or residual damage. These included patients who developed esophageal stricture following the consumption of caustic soda, bleach, or alkali. This was the only consequence observed in this study due to corrosive ingestion, and the difference was statistically significant ($p < 0.05$). 3 (4.3%) patients died, and 4 (5.7%) did not consult a doctor. (Tables 1 and 2)

Table 1: Demographic distribution with poisoning (n=70).

Variables	=n	%age
Age (Years)		
Upto 1	56	80
1 – 5	03	04
> 5	11	16
Sex		
Male	42	60
Female	28	40

Table 2: Qualitative variables of children with poisoning

Regions	=n	%age
Outcome		
Discharged without any sequale	59	84.3
Discharged with sequale	04	5.7
Expired	03	4.3
LAMA	04	5.7
Risk factors identified		
Stored in container meant for beverages	35	50
Medicine not locked	03	4.3
Uneducated parents	02	2.9
Over crowding	02	2.9
Chronic drug users	02	2.9
Undetermined	26	37.1
A etiological agents		
Kerosene oil	35	50
Pharmaceutical agents	10	14.3
Chemicals	09	12.9
Household products	05	7.1
Insecticides	05	7.1
Unknown	06	8.6

DISCUSSION:

Many studies have shown that children under five are particularly vulnerable to accidental poisoning. Our study is consistent with this statement. The mean age of gifts is 2.89 years in this study, which is comparable to the mean age of 2.73 in the Indian study. Children in this age group tend to put anything in their mouths, which predisposes them to accidental poisoning. The majority of men (60%), with the ratio of men to women being 1.5: 1 was obvious and is in line with previous local research16. A similar male advantage has been reported in many other studies. In our study, 87.1% of patients were from an urban background, while 72.3% reported from a reference center in India. Children in urban areas are more likely to be exposed to poisonous substances such as household products and drugs as they are used more often in cities than in rural areas due to differences in lifestyle. Moreover, the hospital basin is mainly made up of city dwellers with easy access to city residents. Most of the drivers are city residents, although we also direct from rural areas. The most common agent in our research was kerosene oil. It has been reported as the most common substance causing accidental poisoning to children not only from other Pakistani cities but also from other developing countries in Asia (India, Malaysia) and Africa (Nigeria). Kerosene oil is used as a fuel for cooking and other purposes in most developing countries and is readily available to explorers. It is sold openly and families buy it and store it in their own containers. Soda bottles are often used for storage and kept in the kitchen. Children often mistake it for non-alcoholic drinks and thus for consumption. Pharmaceuticals were the second most common cause of poisoning in our study, with psychotropic and sedative drugs being more common. This was mainly due to the lack of awareness of adult family members about the safe storage of drugs. Some of them are very similar to sweets (candies, candies) that children love to eat. The same results were seen in the Karachi study3. The etiologic factors included remained undetermined in 8.6% of the cases in our study; other studies found between 9.6% and 20% of unspecified measures. The most common route was ingestion (99% of cases). Similar results (96.8%) were also reported in the Indian study. 85.7% of the exposure in our study was at home. This is the case (89%) of the survey in Iran. The most common risk factor identified in our study was the fact that the exposed agent was stored in empty discarded soda bottles (50% of the cases) and there was no adequate drug storage thereafter. Similar results were obtained in studies from Malaysia and Thailand. Studies from Greece and Iran found that children without adult supervision and

those who had previously been poisoned were at an increased risk of poisoning. Most of the 59 children (84.3%) in our study were discharged home without sequelae, which is comparable to 92% in another local study. Many of these were from urban areas that had arrived at the hospital earlier and had no mild or moderate symptoms of toxicity. Those who did not seek medical advice were mostly from rural areas, uneducated, with false beliefs and poor socio-economic status.

CONCLUSION:

Accidental child poisoning is a serious public health problem causing morbidity and mortality, especially when it can be prevented. Kerosene, pharmaceuticals and household chemicals are the main substances responsible for accidental poisoning because these substances are not sold in appropriate containers or properly stored. Most of the children who developed accidental poisoning were discharged home without sequelae. Parent education, proper storage of potentially hazardous substances, and proper parental supervision can be the most important activities in preventing children's poisoning.

REFERENCES:

1. Mohammadi, Navid, Nafiseh Rastgoo, and Sohrab Esmaeil Zadeh. "Epidemiological and Clinical Features of Acute Poisoning in Children in a Referral Teaching Hospital in Iran, 2015-2018." *Journal of Comprehensive Pediatrics* 11, no. 4 (2020).
2. Meraz-Muñoz, Alejandro, Eitan Amir, Pamela Ng, Carmen Avila-Casado, Claire Ragobar, Christopher Chan, Joseph Kim, Ron Wald, and Abhijat Kitchlu. "Acute kidney injury associated with immune checkpoint inhibitor therapy: incidence, risk factors and outcomes." *Journal for immunotherapy of cancer* 8, no. 1 (2020).
3. Albals, Dima, Alaa Yehya, Reem Issa, and Aida Fawadleh. "Retrospective assessment of acute poisoning incidents by nonpharmaceutical agents in Jordan: Data from Pharmacy One™ Poison Call Center, 2014 to 2018—Part I." *Pharmacology Research & Perspectives* 8, no. 2 (2020): e00582.
4. Björnsson, Einar S. "Epidemiology, Predisposing Factors, and Outcomes of Drug-Induced Liver Injury." *Clinics in liver disease* 24, no. 1 (2020): 1-10.
5. Williams, Vijai, Mounika Reddy, Arun Bansal, Arun K. Baranwal, Karthi Nallasamy, Suresh K. Angurana, Sanjeev Handa, Jagat Ram, Muralidharan Jayashree, and Sunit Singhi. "Intensive care needs and long-term outcome of pediatric toxic epidermal necrolysis–A 10-year experience." *International Journal of Dermatology* (2020).
6. Shi, Tingting, Chen Chen, Li Huang, Huifeng Fan, Gen Lu, Diyuan Yang, Changan Zhao, and Dongwei Zhang. "Risk factors for mortality from severe community-acquired pneumonia in hospitalized children transferred to the pediatric intensive care unit." *Pediatrics & Neonatology* (2020).
7. Flick, Randall, Christina M. Pabelick, Tracy E. Harrison, Kara A. Bjur, and Elena Ashikhmina. "Clinical complications in pediatric anesthesia." *Gregory's Pediatric Anesthesia* (2020): 1118-1150.
8. Lekei, Elikana, Aiwerasia V. Ngowi, Jones Kapeleka, and Leslie London. "Acute pesticide poisoning amongst adolescent girls and women in northern Tanzania." *BMC public health* 20, no. 1 (2020): 1-8.
9. Kuntal, Mohanshyam, and Keerti Swarnkar. "Clinical Profile and Predictor of Adverse Outcome in Children with Acute Encephalitis Syndrome: A Cross-Sectional Study." *Journal of Krishna Institute of Medical Sciences (JKIMSU)* 9, no. 1 (2020).
10. Bordea, Mădălina Adriana, Alexandru Pîrvan, Dan Gheban, Ciprian Silaghi, Iulia Lupan, Gabriel Samașca, Lia Pepelea, Lia Monica Junie, and Carmen Costache. "Infectious Esophagitis in Romanian Children: From Etiology and Risk Factors to Clinical Characteristics and Endoscopic Features." *Journal of Clinical Medicine* 9, no. 4 (2020): 939.
11. Kemelbekov, Kanatzhan, Elmira Ospanova, Bakhtygul Baimakhanova, Zharylkap Zhumabekov, Klara Zholdas, Zhuldyz Yessentayeva, and Akerke Zaidulla. "Epidemiological Characteristics of New Coronavirus Diseases (COVID-19): Features of Risk Factors and Clinical Features of the Child Population." *Electronic Journal of General Medicine* 17, no. 6 (2020).
12. Thongprayoon, Charat, Panupong Hansrivijit, Karthik Kovvuru, Swetha R. Kanduri, Aldo Torres-Ortiz, Prakrati Acharya, Maria L. Gonzalez-Suarez, Wisit Kaewput, Tarun Bathini, and Wisit Cheungpasitporn. "Diagnostics, risk factors, treatment and outcomes of acute kidney injury in a new paradigm." (2020): 1104.
13. Rahman, Md, Md Sobur, Md Islam, Samina Ievy, Md Hossain, Mohamed E. El Zowalaty, A. M. M. Rahman, and Hossam M. Ashour. "Zoonotic Diseases: Etiology, Impact, and Control." *Microorganisms* 8, no. 9 (2020): 1405.

14. Mahmood, Nasir, Saman Shahid, Taimur Bakhshi, Sehar Riaz, Hafiz Ghufran, and Muhammad Yaqoob. "Identification of significant risks in pediatric acute lymphoblastic leukemia (ALL) through machine learning (ML) approach." *Medical & Biological Engineering & Computing* (2020): 1-10.
15. Miao, Xiaohui, Pingqiao Yuan, Lihong Zhao, Le Zhang, Xinyue Jiang, Hanyu Cao, Hongrui Shi, Jinmei Li, and Rong Yang. "Risk factors for pneumonia in patients with anti-NMDA receptor encephalitis: A single-center retrospective study." *Medicine* 99, no. 17 (2020): e19802.