



Original Research Article

**Epidemiology of Drugs and Chemical Poisoning in Children
In Babylon Governorate**

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Abstract

Acute Poisoning in children is one of main public health problems and regarded a frequent cause of admission to hospitals. Its epidemiology is necessary to determine the extent and characteristics of this problem. A hospital based retrospective study was done to determine the epidemiology of chemical and drug poisoning in children admitted to Babylon Gynecology and Pediatrics Teaching Hospital during one year duration from June 2013 to May 2014. Two hundred and twenty seven patient's records were reviewed regarding poisoning. One hundred and fifty one (66.5%) of them were males. Hydrocarbons poisoning was the most prevalent poisoning followed by drugs. Patients from rural areas were more than the patients from the urban areas (57.7%, 42.3%) respectively.

Key words: Epidemiology, Retrospective, Chemical, Drug, Poisoning.

وبائية التسمم بالأدوية والمواد الكيميائية لدى الأطفال

الخلاصة

يعد التسمم الحاد في الأطفال من المشاكل المهمة في الصحة العامة ويمثل سببا متكررا لدخول الاطفال الى المشافي . يعد المسح الوبائي الخاص لكل بلد ضروريا لتحديد مدى وخصائص هذه المشكلة وطبقا لها وعلى اساسها يمكن اتخاذ الاجراءات الوقائية. تصف هذه الدراسة الاسترجاعية التفشي الوبائي للتسمم بالأدوية والمواد الكيميائية للأطفال الذين ادخلوا الى مشفى بابل التعليمي للنسائية والاطفال خلال سنة واحدة وذلك من بداية شهر حزيران لعام ٢٠١٣م ولغاية نهاية شهر آيار لعام ٢٠١٤م. تمت مراجعة سجلات ٢٢٧ مريضا مصابا بالتسمم في مشفى بابل التعليمي للنسائية والاطفال. كانت نسبة الذكور (٦٦.٥ %) أي ١٥١ طفلا وكانت اعلى نسبة للتسمم بمركبات الهيدروكربون يليها التسمم الدوائي. كانت اعلى نسبة من المرضى الذين تمت دراستهم من المناطق الريفية حيث كانت نسبتهم (٥٧.٧ %) في حين كانت النسبة المتيقنة (٤٢.٣ %) من سكان الحضر.

الكلمات المفتاحية: وبائية, استرجاعية, كيميائية و ادوية, تسمم.

Introduction

Poisoning can be defined as taking, or being exposed to, a substance or substances injurious to health[1]. Childhood poisoning is a major cause of morbidity in the developing as well as the developed world[2]. The incidence and the risk factors for children's acute poisoning change with time and differ from country to country, and even between geographical areas within the same country[3]. Poisoning is mostly observed at 1-5 years of age and

they constitute 80% of all poisoning cases. Medications given by parents are the main causes of poisoning in the first year of life. House cleaning products cause most cases of poisoning at 2-3 years. The medications left open are the main causes of poisoning at 3-5 years of age[4]. Accidental poisoning is mostly occur in children < 6 years [5,6]. Upon unintentional injury death among children aged between 1 and 14 years, poisonings ranked fourth, after road traffic crashes,

fires and drowning[7].The mortality rate due to poisoning is 3 – 5 %[4]. The most common poisonings among children were due to pharmaceutical products[8].Children may take plants accidentally. Most plants are relatively nontoxic but some of them may cause serious symptoms like deadly nightshade family (including the Datura) [9].Kerosene, medicines, insecticides, and household cleaning products as major hazards for poisoning among young children[3,10].It was reported in an Iraqis study that hydrocarbons (mainly kerosene) constitute the most common poisoning in children below five years [11].Poison prevention education should be an important part of all well child visits, starting at the 6-mo visit [12]. The study was done to determine the epidemiology of chemical and drug poisoning in children who were admitted to Babylon Teaching Hospital of Gynecology and Pediatrics.

Patients and Methods

A retrospective study was carried out in Babylon Teaching Hospital of Gynecology and Pediatrics/ Babil Governorate / Iraq, to review the hospital records of 227 children who were admitted to this hospital diagnosed as having chemical and drug poisoning from June 2013 to May 2014. The data collected, including poisonous type, route of exposure, date of poisoning,gender,age,residency, and the progress with the outcome of each child's condition. The age of children included in the study ranges from 10 to 132 months. Children who had food poisoning, snake bites and scorpion stings were excluded from this study.

Statistical analysis

All the collected data were transferred to a Microsoft Excel spreadsheet and nonparametric correlation (spearman's rho and chi square) tests to determine the relationship between the types of

poisonings and the parameters accordingly.P value was regarded significant if it was less than 0.05 and highly significant if it is less than 0.01.

Results

Two hundred and twenty seven patients attended Babylon Gynecology and Pediatrics Teaching Hospital presented with ingestion of poisonous material during one year duration. The ratio of males to females was 1.98:1. The age of the patients was ranging from 10 to 132 months, with a mean and standard deviation of 36.82 ± 21.9 months. The patients from rural areas were 131 (57.7%). Ninety six percent of patients were at age six years and below (Table- 1).Hydrocarbons were the most common agents causing poisoning 143 (62.9%), while the least commonly involved agents in this study were rodenticides 2 (0.9%) (Table-2). Fourteen patients (6.2%) needed admission to Intensive Care Units (ICU) and then discharged after improvement except one patient who unfortunately died. Of the total number of patients involved in this study, 119 (52.4%) patients needed only admission to emergency unit and discharged in the first 24 hours after improvement while the remaining patients 94 (41.4%) had been admitted to the wards.In hydrocarbon poisoning the males constitute (67.8%), p value = 0.0001. Most of the patients with hydrocarbon poisoning were from rural areas 105 (73.4%), p value = 0.0001. Regarding drug poisoning, most of the patients were from urban areas 30 (76.9%) while only 9 (23.1%) patients were from rural areas (p value =0.0001). Most of the patients with drug poisoning were males 27(69.2%) while the females constitutes 30.8%(p value=0.016) (Table-2). The highest number of patients with poisoning was in February (35 patients, 15.4%), (Table -3).

Table1: General characteristics of the studied children

General characteristics	Number	%
Age (months) Range Mean± SD	10 – 132 36.82 ± 21.97	
Gender: Males Females	151 76	66.5 35.5
Residency: Urban Rural	96 131	42.3 57.7

Table 2 : The relationship between the demographic criteria of the studied children and the type of poisoning

Type of poison (No.)	Age(months) Range & Mean ±SD	Gender No. (%)	Residence No. (%)	Outcome No. (%)
Hydrocarbons (143)	Range : 10 – 132 Mean ±SD 35.3±23.3	Male 97(67.8) Female 46 (22.2) P= 0.0001	Urban 38(26.6) Rural 105(73.4) P= 0.0001	Admitted to EU then improved 72(50.3) Admitted to the wards 67 (46.9) Admitted to ICU then improved 4(2.8)
Drugs (39)	Range : 11 – 108 Mean±SD:42.6 ±18.9	Male 27(69.2) Female 12 (30.8) P=0.016	Urban 30(76.9) Rural 9(23.1) P= 0.0001	Admitted to EU then improved 20 (51.3) Admitted to ward 16 (41) Admitted to ICU then improved 3 (7.7)
Detergents (20)	Range : 18 – 60 Mean±SD:34±12.9	Male 13 (65) Female 7 (35) P=0.180	Urban 14(70) Rural 6(30) P = 0.074	Admitted to EU then discharged 16 (80) Admitted to wards 3 (15) Admitted to ICU then died 1 (5)
Organophosphorus Compounds (10)	Range: 14 – 108 Mean ±SD: 38.7±28.7	Male 6(60) Female 4(40) P= 0.527	Urban 6(60) Rural 4(40) P = 0.527	Admitted to EU only 3 (30) Admitted to wards 4 (40) Admitted to ICU then to ward 3 (30)
Unknown Substances (8)	Range : 12 – 72 Mean ±SD : 34.5±20.7	Male 4(50) Female 4(50) P= 0.5	Urban 6(75) Rural 2(25) P = 0.289	Admitted to EU 1 (12.5) Admitted to wards 5 (62.5) Admitted to ICU then to wards 3 (25)
Plants (5)	Range : 36 – 72 Mean ±SD : 51 ±15.6	Male 3(60) Female 2(40) P= 0.655	Urban 2(40) Rural 3(60) P = 0.655	Admitted to ward then improved 5 (100)
Rodenticides (2)	Range : 12 – 16 Mean ± SD : 14±2.8	Male 1(50) Female 1(50)	Urban 0(0) Rural 2(100) P= 0.0001	Admitted to EU then discharged 2 (100)

EU: Emergency Unit, ICU: Intensive Care Unit

Table 3: Distribution Of Poisoning According To Months

Type Of Poison	June 2013	Jul. 2013	Aug. 2013	Sep. 2013	Oct 2013	Nov. 2013	Dec. 2013	Jan. 2014	Feb. 2014	Mar. 2014	Apr. 2014	May 2014	Total No. %
Hydrocarbons	12 8.4 %	7 4.9%	11 7.7%	20 13.9 %	11 7.7%	9 6.3%	8 5.6%	8 5.6%	24 16.8 %	13 9.1%	13 9.1%	7 4.9%	143 62.9 %
Drugs	6 15.4 %	2 5.1%	4 10.3 %	4 10.3 %	0	4 10.3 %	1 2.5%	4 10.3 %	6 15.4 %	3 7.7%	3 7.7%	2 5.1%	39 17.9%
Cleaning products	0	0	2 10%	0	3 15%	1 5%	2 10%	1 5%	2 10%	3 15%	6 30%	0	20 8.8%
Organophosphorus compounds	0	1 10%	1 10%	0	0	1 10%	1 10%	0	2 20%	3 30%	0	1 10%	10 4.4%
Unknown substances	0	1 12.5 %	0	1 12.5 %	2 25%	0	0	1 12.5 %	1 12.5 %	2 25%	0	0	8 3.5%
Plants	1 20%	0	0	0	0	4 80%	0	0	0	0	0	0	5 2.2%
Rodenticides	0	0	0	0	0	0	0	2 100 %	0	0	0	0	2 0.9%
Total NO. %	19 8.37 %	11 4.84 %	18 7.92 %	25 11%	16 7%	19 8.37 %	12 5.28 %	16 7%	35 15.41 %	24 10.57 %	22 9.69 %	10 4.4%	227 99.85 %

Discussion

Children under 6 years were most commonly involved in this study, 210 patients (92.5%) ; and this pattern is consistent with Nowneet Kumar Bhat et al study in India[13], and also consistent with most of the other studies in the developed and developing countries[14,15]. This was explained by the rapid neurological development leading to increased exploratory activity and natural oral curiosity to mouth objects , could be the reasons for frequent involvement of preschool children in poisoning accidents[13,14,15]. Male predominance was noted in this study (66.5%) and this was concordant to other studies done in North India[14,16], in Turkey by Sabiha Sahin et al[17,18] and in Egypt by Raed M Alazab[19]. This was also observed

in Pakistan's and in Kuwait's study[1,20]. This was explained by that, males are more active than females, less obeying to orders, and more curious to explore the world[19]. More than half of the patients in this study (57.7%) were from rural areas and this goes with the results of a study done in North Indian by Nowneet Kumar et al[13], but it was the reverse of a study done by Raed Alazab in Egypt[19] where most of the patients were from urban areas. Hydrocarbons were the most common poisonous agents in this study (62.9%), followed by drugs (17.9%) then detergents and insecticides (organophosphorus) (4.4 %) and this was concordant with Turkish study done by Sabiha Sahin[17] and an Iraqi study done by Rabab H. Baaker where the hydrocarbons constitute the most common

agents (56.2%), which may be due to differences in using hydrocarbons in homes in different countries, followed by drugs then insecticides, household products, and rat killer poisoning[11]; while other results done in Turkey, United Arab Emirates, Oman and Greece, mentioned that drugs were the major cause of poisoning[18,21,22,23]. This could be explained by changing in habits, and the improvement in the socioeconomic state. The number of patients with hydrocarbon poisoning in this study was more in the rural than the urban areas (73.4%, 26.65%) respectively, while the number of patients with drug poisoning was more in the urban (76.9%) than that in the rural areas (23.1%) and this may be related to the difference in the lifestyle between rural and urban residency. One patient of those recruited in this study died and this was similar to the study of Raed M Alazab[19]. The lower number of death could be attributed to ingestion of less toxic substances and the poisoning took place with small amounts and early and proper care given to the poisoned patients.

Conclusion

The majority of poisoning occurs in males less than 6 years old living in rural areas. Hydrocarbons and drugs are the most common types of poisonous substances. Most of children improved within short period in the emergency department and few needed admission to ICU with only one death noted in this study.

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