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# SPECTRUM OF POISONING IN CHILDREN; STUDY IN SOUTH KASHMIR

Pediatrics

**Aasif Aziz Wani** Consultant Pediatrics G.M.C Anantnag Kashmir.

**Shazia Ashraf*** Senior Resident anaesthesia G.M.C Srinagar. *Corresponding Author

## ABSTRACT

**Introduction:** Childhood poisoning episodes are always a threat to young children because of their restless and exploring nature. This is particularly common in unsupervised children in rural areas because of big family sizes and overburdened mothers. Suicidal poisoning although uncommon in pediatric age, is now showing an increasing trend in adolescence because of various social and mental issues.

**Material and methods:** This prospective observational study was conducted at district hospital Anantnag, for a period of one year from January 2018 to December 2018. Patients in age group of 0-18 years with history of acute poisoning were enrolled in the study and complete clinical history and examination was taken in detail and recorded on a proforma.

**Results :** A total of 127 poisoning cases were recorded. Organophosphorus poisoning was reported in 59% patients; rodenticide ingestion in around 15% cases; kerosene ingestion in 12.59% cases. Prescription drug ingestion was seen in 6% cases. Datura poisoning which is seen often here in Kashmir was reported in 5 cases.

**Conclusion :** Simple measures like parental education, safe storage and use of child-proof packaging and containers for drugs and insecticides and establishing Poison control centres at tertiary care level.

## KEYWORDS

poisoning, accidental, organophosphorus, kerosene ingestion, datura poisoning

## INTRODUCTION

Poisoning is one of the common medical emergencies encountered in paediatric practice and is a worldwide problem. (Wilkerson, Northington, nurse, & 2005, n.d.) The profile of poisoning varies in different parts of the world and within the country also depending on variables like education, demography, socioeconomic factors, customs and local belief. With the reduction in childhood mortality from infectious diseases, due to advent of immunizing agents and antimicrobials, accidents including poisoning are one of the leading causes of morbidity and mortality among children in the west. Acute poisoning in children is common and in many cases it is preventable. The pattern of poisoning is related to the developmental stage of child and the accessibility of the poisonous substance. Accidental poisoning is common in the preschool or toddler age group because the children up to this age have exploratory tendency for the substance by taking it into the mouth while the suicidal poisoning is due to arguments by parents or stress (Dutta et al., 1998a) in adolescent age group because they have access to the common household known poisonous substance.

Epidemiological surveillance specific for each country and region is necessary to determine the extent and characteristics of the problem, according to which related preventive measures can be taken. There are a few studies from our region that describe the profile of poisoned patients. We carried-out this study in Maternity and child care hospital Anantnag with the aim of determining the profile and immediate outcome of acute poisoning in children.

## MATERIAL AND METHODS

A Prospective observational study conducted in Maternity and Child health department of District hospital Anantnag was conducted from January 2018 to December 2018.

### *Inclusion criteria*

Pediatric patients in the age group of 0-18 years with history of recent consumption of poisonous substance with or without any signs of toxicity.

### *Exclusion criteria*

Those cases with history of food poisoning, animal bite, insect bite, chronic poisoning were excluded from the study.

Clinical history was taken in detail with reference to the age, sex, socioeconomic status , demography, nature of poisoning, the time elapsed between consumption and reporting to the hospital, intent, symptomatology, duration of stay in the hospital and outcome. The examination findings were recorded as per proforma from patient's case record.

## RESULTS

One hundred and twenty seven (127) cases of poisoning among the total admission of 8739 children between 0-18 years were recorded from January 2018 to December 2018 in Maternity and Child unit of District hospital Anantnag. This is roughly an incidence of 1.45%. The majority of our children, i.e., 82 (64.5%)were in the 1- 6 year age group, while 6 - 12 year and 12 - 18-year-old comprised 26(20.4%) and 17(13.3%) of our patients respectively Table 1. Male /Female ratio was ( 1.59 : 1). Table 1 depicts male female distribution in these age groups. 80 patients were referred from peripheral health institutions while 47 patients came from the immediate locality of Anantnag.

**TABLE 1: Sex wise distribution and mode of poisoning in different age groups**

| Age | Male | Female | Total | Accidental | Suicidal |
|---|---|---|---|---|---|
| <1 yr | 1 | 1 | 2 | 2 | 0 |
| 1-6 yr | 50 | 32 | 82 | 82 | 0 |
| 6-12 yr | 15 | 11 | 26 | 26 | 0 |
| 12-18 yr | 5 | 12 | 17 | 13 | 4 |
| Sum | 71 | 56 | 127 | 123 | 4 |

123 patients were cases of accidental poisoning and only 4 cases were suicidal. These 4 cases were adolescent females in the age group of 12-18 years. One girl with suicidal poisoning was being treated for OCD. Seventy cases presented within one hour of exposure. Fifty patients presented in 1-6 hours. Seven patients presented late after 6 hours. TABLE 2

**Table 2: Time between ingestion and arrival in hospital**

| Arrival time since poisoning | Number |
|---|---|
| <1 hour | 70 |
| 1-6 hours | 50 |
| >6 hours | 7 |

Seventy two patients developed symptoms of toxicity depending on the poison consumed. They were managed satisfactorily in our facility. Fifteen cases had a complicated course and developed altered sensorium, respiratory distress, seizures, ataxia, hypotension, cyanosis, renal or liver failure and were referred to PICU at nearest tertiary care pediatric centre. Forty patients were asymptomatic during the period of observation of 8-12 hours.

Insecticides/ rodenticides, kerosene and prescription/ over the counter drugs are the commonest poisons encountered. Organophosphate ingestion was the commonest poisoning in around seventy five cases. Zinc phosphide rodenticide was seen in twenty cases. Sixteen cases had kerosene ingestion. Eight patients had accidentally consumed household drugs like anticold medications, antihistaminics, paracetamol, antiepileptics and thyroxine. Five patients presented to

us with datura poisoning. Three children had exposure to naphthalene balls. Table 3

**Table 3: Etiological agents in poisononig**

| Broad class | Poison | Number (%) |
|---|---|---|
| Pesticides / insecticides | Organophosphates | 75 ( 59.05 %) |
| | Zinc phosphide | 20( 15.74 %) |
| Hydrocarbons | Kerosene | 16 (12.59%) |
| Drugs | Anticold medications | 2 ( 1.5%) |
| | Antihistaminics | 2 (1.5%) |
| | Paracetamol | 2( 1.5%) |
| | Antiepileptic medications | 1( 0.7%) |
| | Thyroxine | 1( 0.7%) |
| Toxic plants | Datura | 5( 3.93%) |
| Miscellaneous | Naphthalene balls | 3 ( 2.3%) |

Cholinergic symptoms like drooling, vomiting, respiratory distress, convulsions were commonly encountered. Kerosene ingestion presented with respiratory distress and in few cases progressed to pnemonitis and prolonged hospitalization. Nonspecific symptoms like abdominal pain were also seen. Organophosphate and kerosene ingestion had classic odors associated.

## DISCUSSION

Pediatric poisoning is a significant cause of morbidity and mortality in our country. It is responsible for 0.33% to 7.6% of total admissions in pediatric wards at various hospitals across India. (Dutta et al., 1998b) Our study had an incidence of 1.45%. Majority of children (64.5%) were in age group of 1-6 years. This is because of exploring nature of children in this age and whatever interesting lands in their mouths. Similar findings were reported in many studies. (Dutta et al., 1998b) (Kumar Bhat, Dhar, Ahmad, & Chandar, n.d.) (Akhtar, Rani, & Al-Anezi, 2006) However contrasting results were documented by Sharma J et al (Sharma J & Rk, n.d.) where the most common age group was 11-18 years and Singh M et al (Singh, Hessam, Azamy, & Arya, 1984) who reported maximum incidence in above 5 year age. We had a male female ratio of 1.59:1 and males hence outnumbered females. Males are more inquisitive and active in most of cases, but it may not always be true. It is in conformity with other studies too. (Dutta et al., 1998b) (Kumar Bhat et al., n.d.) (Budhathoki, n.d.) Incidence was more common in males in less than 5 years of age group, whereas female predominance was seen in adolescent age group; with overall female predominance. Similar findings were documented by others. (Devaranavadagi, Patel, & Shankar, 2017)

Almost all cases of poisoning in children < 12-year-old are accidental in nature in contrast to adolescents in which it is more often suicidal. Similar findings were shown by many studies . (Gupta, Peshin, Srivastava, & Kaleekal, 2003) (Christoffel, Marcus, Sagerman, & Bennett, 1988) (Gupta et al., 2003) Majority of patients were referred from peripheral hospitals because of poor peripheral health services. Seventy cases presented within one hour of exposure. Fifty patients presented in 1-6 hours. Seven patients presented late after 6 hours. Our district is the biggest in Kashmir state. And patients may waste many hours even before availing secondary level healthcare. However some patients did get services like stomach wash and other basic interventions at primary health centers and sub district hospitals. V Kumar (Kumar, 1991) reported the average time interval to be 5.5 hours and Singh et al (S., S., N.K., & L., 1995)reported that the time interval of 6.77 hours in their studies.

In the present study the maximum numbers of cases of poisoning were due to the pesticides. Organophosphate ingestion was the commonest poisoning in around seventy five cases. Organophosphorus compounds are frequently used in the valley for fruit crops and accounted for more than 59% of cases in our study. Organophosphorus poisoning has increased dramatically over past few years because of easy availability of pesticides especially in rural areas. (Wani, Ahmad, Kaul, & Sethi, 2004) Organophosphates were the commonest agents in pediatric poisoning in many studies too. (Kumar Bhat et al., n.d.) (Akhtar et al., 2006) (Budhathoki, n.d.) Sixteen cases had kerosene ingestion. Kerosene oil ingestion results in toxicity of gastrointestinal, respiratory and central nervous system. Pneumonia is the commonest complication. (Buhariwalla & Sanjanwalla, 1969) (Ahmad Wani, Ahmad, & Sethi, 2004) Kerosene constitutes a majority factor in childhood poisoning in rural areas. Some studies have shown childhood poisonings in around 25 - 50% of cases (Ahmad Wani et al., 2004) (Dutta et al., 1998b)

Household drug poisoning was seen in eight cases. Because of lack of availability of child-proof containers and packaging, and also on account of their being stored within easy reach of children drug poisoning is an important cause of child poisoning. (Chan, Kong, & 1996, n.d.) (Buffoni, Reboa, Galletti, Santis, & Tarateta, 1981) (Dutta et al., 1998a)

## CONCLUSION

Simple measures like parental education, safe storage and use of child-proof packaging and containers for drugs and insecticides, could go a long way in preventing a large proportion of morbidity and mortality related to childhood poisoning. Due to rapid socioeconomic development , in the last couple of decades and with the wider availability of LPG and lower availability of kerosene, the kerosene poisoning is showing a downward trend.

Suicidal poisoning in the teenagers either due to stress or due to the arguments by the parents and can be prevented by proper counseling. Last but not the least poison control centres should be established by tertiary care centres and numbers to be displayed for the first aid and referring more severe poisoning cases for treatment in hospital.

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