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Abstract- *Background:* Acute pediatric poisoning is a major health concern causing significant morbidity and mortality in pediatric practice in the critical care setting. Majority of poisonings are accidental and unintentional and occur in the toddlers and preschool age children. The objectives of this study were to assess the pattern of pediatric poisoning and its outcomes in a tertiary care setting.

Methods: Prospective observational study conducted in the Department of Pediatrics, Maternity and Child Care Hospital Anantnag over a study period of one year extending from April 2019 to April 2020.204 patients were enrolled in the study. Prevalence of admissions was 2.40%. More males were admitted compared to females. (1.42:1). Majority of patients belonged to rural background (n = 114,55.88%).

Keywords: *poisoning, organophosphates, hydrocarbons.*

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A Study of Pediatric Poisonings in a Tertiary Care Hospital in Jammu and Kashmir in India

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Methods: Prospective observational study conducted in the Department of Pediatrics, Maternity and Child Care Hospital Anantnag over a study period of one year extending from April 2019 to April 2020.204 patients were enrolled in the study. Prevalence of admissions was 2.40%. More males were admitted compared to females. (1.42:1). Majority of patients belonged to rural background (n = 114,55.88%). Toddlers and pre-school children was the commonest age group affected (n=100,49.02%). Indoor poisoning was more common compared to outdoor poisoning. (n=178cases, 87.25%). Accidental poisoning was more common than suicidal and homicidal poisoning (n=170 cases, 83.33%). Organophosphate compounds were the commonest compounds encountered (n=67,32.85%). About 14 patients died during hospital stay. The case fatality rate was 6.86%.

Conclusions: Acute poisoning is a common cause of mortality and morbidity and is a leading cause of children seeking critical care in a hospital setting especially in infancy and preschool age group. Prevention by proper disposal of household poisonous substances, health education, keeping household poisons and drug containers away from reach of children in sealed containers and avoidance of keeping of liquid household poisons or drugs in empty containers meant for food are key strategies to prevent poisoning related mortality and morbidity.

Keywords: poisoning, organophosphates, hydrocarbons.

I. Introduction

Acute poisoning is one of the commonest encountered emergencies in critical care setting in children and is one of the commonest reasons of children seeking specialized care and admission to the hospital. Poison is a substance which when inhaled, ingested or absorbed is injurious to human health either by causing direct injury to the human body or reaction of body to the toxic substance[1]. Poisoning can be accidental or deliberate with accidental poisoning being the more common in pediatric practice [2]. Most cases of pediatric poisoning are unintentional as young children are not mature enough to understand the consequences of ingestion of intoxicants [3]. Intentional poisoning becomes increasingly common in adolescents [4]. The type of poison consumed varies and depends upon the racial, ethnic, social, cultural, economic and educational backgrounds.[5,6]

As children acquire the ability to walk, reach out for things and explore surroundings and their immediate environment, they can easily fall prey to accidental ingestion of certain substances which are within their reach. It is a common practice by parents to keep household poisons in beverage bottles and empty cans of edible food materials. Such containers if within the reach of children can be easily mistaken for an edible substance and consumed by the child. This is also true of certain liquid medications and drugs which if not left properly sealed can also be mistakenly consumed [7]. The risk is especially increased if the substance is odorless, colorless and not obnoxious to taste. Such substances can be consumed in large quantities without apparent immediate manifestations and can lead to more worse consequences. [8,9]

Household poisonous products constitute the bulk of poisonous products in developing countries and drugs and pharmaceutical products are more commonly encountered in developed countries[10,11]. There is a considerable underreporting of poisoning cases as most mild cases are managed at local subcenters and primary health centers and are not referred to subdistrict and district hospitals. As such the data available in a tertiary care center significantly underestimates the actual magnitude of poisoning and hence the data available in tertiary care hospitals can't be extrapolated to get an idea about the actual magnitude of the poisoning problem in our state in particular and country in general.

In the present study we aimed to study the clinical, epidemiological profile and outcomes of poisonings in pediatric age group presenting to a tertiary care hospital in Kashmir Valley of India.

II. Material and Methods

The study was a prospective observational study conducted at Maternity and Child Care Hospital Anantnag, which is an affiliated hospital of Government Medical college Anantnag. It is a tertiary care referral

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center and caters to the whole pediatric population of South Kashmir seeking health care. All children <15 years of age presenting to hospital on OPD basis or IPD basis and patients who were referred from other peripheral health centers were included in the study. Patients with suspected food poisoning, animal envenomation and drug reactions were excluded from the study. The study period comprised one year from April 2019 to April 2020.

Clinical and demographic profile, type of ingestion, quantity of ingestion, time since ingestion, background of patients, gender, age group, nature of poisonous compound, presenting symptoms and outcome were recorded and details entered in a predesigned proforma. Results were compiled and entered in MS Excel spreadsheet. Data was expressed as frequency and percentage. Standard statistical analysis was used.

III. Results

A total of 204 patients were admitted during the study period of one year. Total admissions in the calendar year was 8513.The prevalence of admissions was 2.40%.

More males were admitted compared to females. Male to female ratio was 1.43 as shown in table 1

Table 1

Gender	Number	Percentage
Males	120	55.82 %
Females	84	41.18%

Patients were divided into 4 age groups. And the commonest age group observed to be involved was 1 to 5 years old as shown in table 2

Table 2

Age group	Frequency	Percentage
<1 year	46	22.55%
1-5 years	100	49.02%
6-10 years	30	14.71%
10-15 years	28	13.72%

More patients were admitted from rural background as shown in table 3

Table 3

Background	Frequency	Percentage
Rural	114	55.88%
Urban	90	44.12%

Indoor poisoning was found in majority of cases (n=178,87.25%)

Table 4

Nature of poisoning	Frequency	Percentage
Indoor	178	87.25%
Outdoor	26	12.75%

Accidental poisoning was the commonest type of poisoning followed by suicidal poisoning and homicidal poisoning as shown in table 5

Table 5

Type of poisoning	Frequency	Percentage
Accidental	170	83.33
Suicidal	28	13.73
Homicidal	6	2.94

Agents responsible for poisoning are summarized in table 6. Organophosphate compounds were the commonest compounds encountered in pediatric poisoning followed by kerosene and drug and pharmaceutical ingestion in that order. Less common causes of poisoning were corrosive ingestion, turpentine ingestion, thinner ingestion phenol ingestion etc. as shown in table 6.

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Table 6

Nature of poison	Frequency	Percentage
Organophosphate	67	32.85%
Kerosene	41	20.10%
Drugs and pharmaceuticals	21	10.29%
Corrosives	19	9.32%
Turpentine	15	7.35%
Thinner	10	4.90%
Phenol	10	4.90%
Gasoline	9	4.41%
Datura	8	3.92%
Mosquito Repellant	4	1.96%

14 patients died during hospital stay. The case fatality rate was 6.68%.

IV. Discussion

Acute poisoning is one of the commonest encountered emergencies in pediatric practice and one of the commonest reasons of children seeking specialized care in a critical care unit. In the United States poisoning has surpassed even motor vehicle accidents to become the leading cause of injury related death. Poisoning in infants, toddlers and early preschool age children is mostly accidental and unintentional whereas in preadolescents and adolescents poisoning is mostly intentional and with either suicidal or homicidal intent.[3,4]

Our aim was to study the clinical and demographic profile of common pediatric poisonings in our set up which is a tertiary care referral center for southern part of the union territory of Jammu and Kashmir.

We encountered a total of 204 patients in our study during the study period from April 2019 to April 2020.there were a total of 8513 admissions during the calendar year. The cases comprised 2.40% of the total admissions; the values were comparable to studies conducted by Kariyappa M et al [12] and Shashidhar V et al [13] who reported a prevalence of 1.54% of total admissions.

Male to female ratio was 1.42:1. Male preponderance is in agreement with studies conducted by Shashidhar V et al [13] and Budhathoki S et al [14] as against female preponderance noted by Kariyappa M et al [12]. Majority of patients belonged to rural backgrounds (n=120,58.82%). Similar findings were observed by Shashidhar V et al[13].

Majority of patients were in the age group of 1-5 years (n=100,49.02%); similar to the study findings conducted by Kariyappa M et al [12] and Budhathoki S E et al [14]. The predominance of this age group can be explained by their inability to understand the consequence and nature of common household poisons, drugs and pharmaceutical ingestion. Such children have exploratory nature coupled with inherent tendency to put everything in mouth. As children grow older the tendency to mouthing decreases and the awareness about common household poisons increases. Hence unintentional poisoning becomes increasingly uncommon and suicidal rates increase.

Organophosphate poisoning was the commonest poisoning noted in our study (n=64;32.89%), followed by kerosene poisoning, drug intoxication, corrosive ingestion, turpentine ingestion, thinner ingestion, phenol ingestion, gasoline ingestion, Datura ingestion and mosquito repellant ingestion in that order. The study conducted by Kariyappa M et al [12] showed kerosene to be the commonest agent incriminated in pediatric poisoning cases whereas the study conducted by Shashidhar V et al[13] showed pesticides to be the commonest agent agreeing with our findings. The higher incidence of organophosphate poisoning in our study can be explained by the fact that a major proportion of business undertaking in the valley of Kashmir is comprised of fruit cultivation and a large proportion of cultivable land is composed of apple and pear orchards. Pesticides are extensively used and so is the availability ample in homes especially in rural and sub urban areas. People keep pesticides in fairly accessible sites leading to accidental consumption by children and poisoning. Kerosene is also widely used as a means to light firewood for bathing places called Hammams in Kashmir in harsh winter; as such kerosene is also found in ample quantities in Kashmiri homes.

14 patients died during hospital stay. The case fatality rate was 6.86%. This was more than the values reported by Kariyappa M et al (2.14%) [12]and much lower than values reported by Buddhathoki et al [14]. The case fatality rate was apparently higher because relatively more patients were admitted in the adolescent age group who had intentionally consumed a large amount of poisonous substance and were brought in a very critical condition.

V. Conclusion

Acute poisoning is a common cause of mortality and morbidity and a common reason to seek medical care especially in the under 5 age group. Organophosphate compounds, kerosene and drugs were the commonest substances to be ingested. The

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measures to reduce acute poisoning include keeping constant vigil on toddlers and preschool children, keeping household poisons in tight containers, keeping household poisons properly labelled and out of reach of children., avoid keeping poisons in empty fluid/beverage bottles to avoid being confused with edible items.

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