

CLINICAL SPECTRUM AND OUTCOME OF KEROSENE POISONING IN PEDIATRIC AGE GROUP IN SOUTH KASHMIR: A PROSPECTIVE OBSERVATIONAL STUDY

ANDLEEB MAJEED¹, MOHD ASHRAF BHAT¹, MALIK SHAKIR HUSSAIN¹, SHOWKAT HUSSAIN TALI^{1*}, SHAGUFTAYOUSUF², ZULEIDAIN HASSAN¹, BILAL AHMAD NAJAR¹, SHEIKH MUSHTAQ AHMAD²

¹Department of Pediatrics, Government Medical College, Anantnag, Jammu and Kashmir, India. ²Department of Obstetrics and Gynaecology, Government Medical College, Anantnag, Jammu and Kashmir, India. E-mail: anantnag.drshowkatshifa@gmail.com

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ABSTRACT

Objective: The objective of the study was to study the clinical profile of kerosene poisoning, its complications and outcome in children in South Kashmir, J and K, India.

Methods: This prospective study of children admitted with kerosene poisoning was conducted in a Govt. Medical College Hospital from January 2019 to December 2021. Demographic data, risk factors, clinical features, and the outcome recorded as per predesigned pro forma were analyzed.

Results: A total of 199 children were admitted with acute poisoning and 77 (38.6%) had kerosene poisoning. Majority of the patients was male (77%) in the age group of 1 year–3 years (80.5%) and from an urban background (80.5%). Clinical features mainly included cough (75.3%), vomiting (64.9%), and fever (50.6%). X-ray was showing right lower lobe pneumonia in 23.3% followed by bilateral peri-hilar infiltration (18.1%). The most common risk factors include improper storage and lack of knowledge in family.

Conclusion: Kerosene poisoning is a common acute poisoning in pediatric age group. Male children in the age group of 1–3 years are most commonly affected. Improper storage is the most common reason for the accidental poisoning.

Keywords: Kerosene, Poisoning, Children.

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INTRODUCTION

Acute poisoning is identified as the fourth leading cause of injury-related mortality in children. Morbidity of poisoning varies across different geographic regions due to variable cultural, social, and economic factors [1]. Kerosene is a hydrocarbon which still remains as a major fuel used for cooking in rural India and its toxicity depends on its constituents and low viscosity. Kerosene poisoning is a preventable cause of morbidity and mortality in the developing countries. Low socioeconomic status, unsafe storage, and large family size are various risk factors reported so far and may change worldwide due to different sociogeographic locations [2].

Ingestion of large quantity of kerosene is rare because of its foul smell and taste. Children can be intoxicated by ingestion, inhalation, or contact of kerosene oil with skin. Primarily, it causes pulmonary complications including chemical pneumonitis, hypoxia, emphysema, and pneumothorax. Signs and symptoms of respiratory system appear within 30 min after aspiration and progress during 48 h and then subside by 1 or 2 weeks. Other manifestations include abdominal pain, gastroenteritis, vomiting, drowsiness, and convulsions [3].

There are many studies on kerosene poisoning worldwide but, to the best of our knowledge, there are no studies on kerosene oil poisoning among children in South Kashmir, J and K, India. This study was performed to determine the prevalence of kerosene poisoning and analysis of clinical profile and its complications in children admitted to a medical college hospital in South Kashmir.

METHODS

This was a prospective observational study conducted between January 2019 and December 2021. All the children admitted with the diagnosis of accidental kerosene ingestion were enrolled for the study.

All the details with special reference to demographic factors, time of ingestion and the probable quantity ingested, clinical manifestations, complications, radiological findings, and transfer rate to a higher center were recorded in a predesigned pro forma and analyzed. Methods to look for a statistical significance were not used as they are not thought to be useful for observation studies [4].

RESULTS

Baseline data and demographic characteristics are depicted in Table 1. Clinical features and complications are depicted in Table 2. Risk factors, recovery, and referral rates are depicted in Table 3.

DISCUSSION

This prospective observational study was conducted at the Department of Pediatrics, Govt. Medical College, Anantnag, J and K, India, over a period of 3 years between January 2019 and December 2021. A total of 77 patients had ingested kerosene. Majority of the patients (80.5%) were in the age group of 1–3 years. The most common clinical features were cough (75.3%) and vomiting (64.9%) followed by fever (50.6%) and dyspnea (45.4%). Only one patient developed convulsions. Half of the patient did not develop any radiological changes. In patients who developed radiological changes, the right lower lobe infiltrates (23.3%) followed by perihilar infiltrates (18.1%) were the most common. Inadequate parental supervision (77.9%) and unsafe storage (75.3%) were the most common risk factors. Almost all (97.4%) recovered after symptomatic treatment and only 2 (2.6%) were shifted to a higher center for further care.

Out of 199 poisoning cases, 77 had ingested kerosene (38.7%). This suggests that the kerosene poisoning is an important cause of acute poisoning in pediatric age group even today. More than half of cases were

Table 1: Baseline data and demographic characteristics

| Year/ characteristics | Total poisoning cases | Kerosene poisoning/ cases no. (%age) |
|--------------------------|--------------------------|---|
| 2019 | 73 | 29 (39.7) |
| 2020 | 65 | 25 (38.4) |
| 2021 | 61 | 23 (37.7) |
| Total | 199 | 77 (38.6) |
| Age | <1 year | 0 (0) |
| | 1-3 years | 62 (80.5) |
| | >3 years | 15 (19.5) |
| Gender | Male | 55 (72) |
| | Female | 22 (28) |
| Residence | Urban | 62 (80.5) |
| | Rural | 15 (19.5) |

Table 2: Clinical and radiological features are depicted

| Clinical features | Radiological patterns | No. of children/%age |
|----------------------|-----------------------------------|-------------------------|
| Fever | | 39 (50.6) |
| Vomiting | | 50 (64.9) |
| Cough | | 58 (75.3) |
| Dyspnea | | 35 (45.4) |
| Cyanosis | | 12 (15.5) |
| Grunting | | 10 (12.9) |
| Drowsiness | | 5 (6.49) |
| Convulsion | | 1 (1.29) |
| Abdominal pain | | 15 (19.4) |
| | Normal | 39 (50.6) |
| | Right lower lobe infiltrate | 18 (23.3) |
| | Bilateral perihilar infiltration | 14 (18.1) |
| | Bilateral lower lobe infiltration | 5 (6.49) |
| | pneumothorax | 0 (0) |
| | Subcutaneous emphysema | 1 (1.29) |

Table 3: Risk factors, recovery, and referral rates are depicted

| Risk factors | Number of patients | Percentage |
|--|--------------------|------------|
| Unsafe storage | 58 | 75.3 |
| Economic problems in a family | 25 | 32.4 |
| Inadequate supervision of the child | 60 | 77.9 |
| Employed parents | 22 | 28.5 |
| Uneducated parents | 15 | 19.4 |
| Farming parents | 5 | 6.49 |
| Recovered | 75 | 97.4 |
| Transferred to a higher center | 2 | 2.6 |

in the age group of <3 years. This is the age when kids start exploring the environment and are inquisitive. In addition, small kids are more often brought to medical attention for the development of symptoms at a lower ingested amount. Males outnumbered females (72 vs. 28). Male dominance is observed throughout the world and may be because of differences in socialization. All cases were poisoned accidentally as no patient was with a history of intentional intake of kerosene. Most of poisoned children were from urban areas (80.5%). This may be for the easy access of urban population to our hospital and for the fact that the patients from rural areas are either kept at home for mild or no symptoms, or managed at nearby hospitals or shifted to pediatric hospital at Srinagar (capital city) directly. Reasons for accidentally poisoning were easy availability (and within the reach), improper storage (in cold drink bottles), and less supervision of parents (working parents). Similar findings have been observed by other researchers too [1-6]. The most common reported symptom was cough in 58 children (75%). Majority of the patients (50.6%) had normal X-ray findings. Patients who developed

radiological changes and right lower lobe infiltrates (23.3%) were the most common closely followed by perihilar infiltrates (18.1%). Our findings were consistent with the finding of the other studies [6-9].

CONCLUSION

Kerosene ingestion is an important cause of acute poisoning in children. Male children in the age group of 1-3 years are most commonly affected. Improper storage is the most common risk factor. The most common symptoms are respiratory and gastrointestinal. The right lower lobe infiltrates are the most common radiological finding. Nearly, all the patients recover after supportive care and only a minority need referral to a higher center for critical care.

What is known?

Kerosene poisoning has been important cause of poisoning in children throughout the world.

What our study adds?

1. Kerosene poisoning is an important cause of poisoning childhood poisoning in South Kashmir, India.
2. Kerosene poisoning is an important cause of childhood poisoning even today, especially when the use of kerosene has declined significantly throughout the world.

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CONFLICTS OF INTEREST

None.

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DISCLAIMER

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