PATTERN AND OUTCOME OF POISONING IN CHILDREN: A STUDY FROM A RURAL TEACHING HOSPITAL, WESTERN MAHARASHTRA, INDIA

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ABSTRACT
Background: Acute poisoning is a common cause for morbidity and mortality in children. The profile and outcome in children with acute poisoning depend a lot on the socioeconomic status, cultural practices, parental education status and availability of health care. The present study was aimed to analyze the pattern and outcome of pediatric poisoning in rural area.

Methodology: This is a retrospective study, conducted over a period of twenty-four months in a rural hospital attached to medical college.

Results: The poisoning constituted 4.7% of total admissions in Pediatric Intensive Care Unit (PICU). Male: Female ratio was 1:33. 98(87.5%) of children were less than 5 years of age. Organophosphorus compounds were most commonly (n=55, 49.1%), responsible for poisoning, followed by kerosene (n=20, 17.9%). Thirty percent children had short stay in hospital i.e., less than 48 hours. Overall survival rate noted in the study was 91% (n=103).

Conclusion: Poisoning in Pediatric age contributes to significant number of admissions to Pediatric Intensive Care Unit in rural area. Insecticide/Pesticides, Kerosene, and plants were leading causes of poisoning.
Table 1. Poisoning cases among total admissions during study period.

<table>
<thead>
<tr>
<th>Duration/Year</th>
<th>Total number of cases</th>
<th>Number of poisoning cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>1051</td>
<td>55 (5.33%)</td>
</tr>
<tr>
<td>2018</td>
<td>1335</td>
<td>57 (4.27%)</td>
</tr>
<tr>
<td>Total</td>
<td>2386</td>
<td>112 (4.7%)</td>
</tr>
</tbody>
</table>

Age and gender variation
Mean age of patients was 3±2.2 years with youngest patient being 5 month old and oldest was 12 years of age. Majority of the children were toddlers (n=52, 46.4%). 9.82% were infants, 31.25% belong to age-group 3-5 years, and 12.5% were above 5 years.

Figure 1. Age-wise distribution.

![Age-wise distribution](image1)

Amongst admitted cases of poisoning 64 (57.1%) were males and 48 (42.9%) were females as shown in Figure 2.

Figure 2. Gender-wise distribution of cases.

![Gender-wise distribution](image2)

Types of poison ingested
Poisoning due to ingestion of insecticide/pesticide was observed in more than half of the cases (n=59, 52.7%), followed by exposure to hydrocarbon (n=23, 20.6%). Other agents of poisoning are listed in Table-2.

Table 2. Agents implicated in pediatric poisoning (n=112).

<table>
<thead>
<tr>
<th>Poisoning agent</th>
<th>No. of patients (%)</th>
<th>Sex distribution (M/F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROCARBONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kerosene</td>
<td>20</td>
<td>10/10</td>
</tr>
<tr>
<td>Other</td>
<td>03</td>
<td>03/00</td>
</tr>
<tr>
<td>INSECTICIDE AND PESTICIDE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OP Compound</td>
<td>55</td>
<td>34/21</td>
</tr>
<tr>
<td>Other</td>
<td>04</td>
<td>03/01</td>
</tr>
<tr>
<td>Plant poisoning</td>
<td>14</td>
<td>05/09</td>
</tr>
<tr>
<td>Drugs</td>
<td>04</td>
<td>01/03</td>
</tr>
<tr>
<td>Others</td>
<td>07</td>
<td>06/01</td>
</tr>
<tr>
<td>Unknown</td>
<td>05</td>
<td>02/03</td>
</tr>
</tbody>
</table>

Month wise distribution of admitted cases during study period has been shown in Figure-3. The cases were observed throughout the year, but more number of cases were noted in the month of February and October in year 2018.

Figure 3. Monthwise distribution of cases.

![Monthwise distribution](image3)

Table 3. Patient distribution according to type of poison and season (N=112).

<table>
<thead>
<tr>
<th>Type of poison</th>
<th>Winter (Oct-Jan)</th>
<th>Summer (Feb-May)</th>
<th>Monsoon (Jun-Sep)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP Compounds</td>
<td>27</td>
<td>18</td>
<td>14</td>
<td>59</td>
</tr>
<tr>
<td>Hydrocarbon</td>
<td>06</td>
<td>14</td>
<td>03</td>
<td>23</td>
</tr>
<tr>
<td>Plants</td>
<td>02</td>
<td>09</td>
<td>03</td>
<td>14</td>
</tr>
<tr>
<td>Others</td>
<td>09</td>
<td>03</td>
<td>04</td>
<td>16</td>
</tr>
</tbody>
</table>

Duration of hospital stay ranged from 3 hours to 20 days. Maximum cases stayed in hospital for 2-4 days, 33 cases (29.5%) stayed in hospital for <2 days and 16 cases stayed >4 days as shown in Table 4.
Male preponderance can be attributed to use/storage of kerosene oil following frequent power cuts during summer months in rural areas.

Duration of hospital stay ranged from 3 hours to 20 days. 33 cases (29.5%) stayed in hospital for less than 2 days. 16 cases (14.3%) stayed in hospital for more than 4 days. Majority of the cases in the present study had hospital stay less than 4 days.

Out of 112 cases of poisoning 102 (91%) cases recovered. The overall burden of mortality in our study was 8%. Similar rate of mortality has been reported. Among 9 cases of death, two-third cases were due to poisoning with insecticide/pesticide ingestion (organophosphorus compound). Mortality was higher in children below five years of age.

Limitations: This study was restricted to a health facility attached to rural medical college and we could not trace cases presented in nearby health facilities thus, this may underestimate the true rate of paediatric poisoning in local community. We could not assess the risk factors for poisoning.

Conclusion
We conclude that accidental poisoning was more in children below five years of age. Insecticides/pesticides and Kerosene were the most common agents contributed to hospital admission with poisoning. Preventive measures such as careful storage of common household products found to be responsible for poisoning in children, keeping the hazardous substance out of reach for children and not leaving the children unattended might contribute to the reduction of incidence.

Compliance with Ethical Standards
Funding: None
Conflict of Interest: None

References:
6. WHO-UNICEF. Children and poisoning: world report on...