A CLINICO-EPIDEMIOLOGICAL STUDY ON PESTICIDE POISONING

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Presented by Medicine unit-Green DMCH
Introduction:

• Over the last few decades, agricultural pesticides have become a common household item in rural areas of the developing world.

• As a result of their easy availability, pesticides have also become commonly used for intentional self poisoning.

• World Health Organization (WHO) estimates, around 3 million poisoning cases with 220,000 deaths occur annually. About 99% of these deaths occur in developing countries.
Objectives:

• To know the clinico-epidemiological aspects and to evaluate the immediate outcome of patients admitted with pesticide poisoning
Methods:

- Over a period of one year between January 2004 to December 2004, victims of pesticide poisoning admitted to one medical indoor department of Dhaka Medical College Hospital, Dhaka were enrolled.

- The diagnosis was based on history of pesticide ingestion and clinical features or with evidence of brought specimen.

- The age, sex, marital status, occupation, cause of intoxication, poison consumed, time elapsed between ingestion and admission to the hospital, signs and severity of intoxication on admission, treatment.

- Outcome were recorded on a predesign case record form.

- Total sixty patients of pesticide poisoning were enrolled.
Results:

Table I. Admission and death due to poisoning in one medical unit of DMCH in 2004

<table>
<thead>
<tr>
<th>Hospital profile</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients admitted</td>
<td>4378</td>
<td></td>
</tr>
<tr>
<td>No. of total deaths</td>
<td>579</td>
<td>13.23</td>
</tr>
<tr>
<td>Total poisoning cases</td>
<td>796</td>
<td>18.18</td>
</tr>
<tr>
<td>Total death due to poisoning</td>
<td>37</td>
<td>6.39</td>
</tr>
<tr>
<td>Total pesticide poisoning</td>
<td>60</td>
<td>7.53</td>
</tr>
<tr>
<td>Total death due to pesticide poisoning</td>
<td>13</td>
<td>21.67</td>
</tr>
</tbody>
</table>
### Demographic characteristics

<table>
<thead>
<tr>
<th>Age (yrs)*</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>31</td>
<td>51.7</td>
</tr>
<tr>
<td>21 – 30</td>
<td>19</td>
<td>31.7</td>
</tr>
<tr>
<td>31 – 40</td>
<td>08</td>
<td>13.2</td>
</tr>
<tr>
<td>41 – 50</td>
<td>01</td>
<td>1.7</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>01</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Sex**

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>24</td>
<td>40.0</td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>60.0</td>
</tr>
</tbody>
</table>

*Mean age = (23.38 ± 1.16) years; range: (13 – 55) years.*
Other socio-demographic features | Number | %
--- | --- | ---
**Residence**
Urban | 26 | 43.3
Rural | 34 | 56.7
**Marital status**
Married | 31 | 51.7
Unmarried | 29 | 48.3
**Occupation**
Student | 21 | 35.0
House-wife | 18 | 30.0
Businessmen | 09 | 15.0
Farmer | 04 | 6.7
Garment’s worker | 02 | 3.3
Maid-servant | 03 | 5.0
Service-holder | 01 | 1.7
Others | 02 | 3.3
Total 796 poisoning cases attended in one medical unit of DMCH, 60(8%) were caused by pesticide, 16(2%) by rodenticide and 8(1%) by fungicide and the rests 711(89%) were caused by other different types of poisoning.
Clinical features of the organophosphorus compound poisoning cases (n = 60)

Cardinal clinical features of poisoning were nausea/vomiting (93.33%), myosis (88.33%) and increased sweating (80%) followed by increased salivation (58.33%), hypotension and urinary incontinence (each 51.67%). Other clinical features were not very common.
majority (93.3%) of the poisoning cases had suicidal intention followed by 5% accidental and 1.7% homicidal. The suicidal intention was not due to any prior psychiatric illness, rather due to various tripling issues amongst the family members.
Nearly three-quarter (73.3%) of the patients recovered completely, 13 (21.7%) patients died of the condition and the rest 3 (5%) were absconded.
Discussion:

• Acute pesticide poisoning by organophosphorus compound has been found as a major clinical problem with 8% of poisoning with 22% mortality in an adult medicine unit in Dhaka Medical College Hospital, Dhaka, Bangladesh.

• In this study, most of the patients were 20 or below 20 years of age (31, 51.7%), 19(31.7%) patients were in between 21-30 years.

• The study shows that the incidence of pesticide poisoning was highest among the students (21, 35%), the next common group were housewives (18, 30%). Other occupations were businessmen (9, 15%), farmer (4, 6.7%), garment’s worker (2, 3.3%), maid servant (3, 5%) and others 5%.
Cont…

• The different source of collection of pesticide in this study shows purchase beforehand for household use 28(46.7%), self purchased poison over the counter 22(36.7%) and left over sample 9(15%).

• This finding indicates that pesticides are easily available and widely used in our country.

• The provision of safety handing of pesticide in the community is urgently required for prevention of pesticide poisoning.
• 98% of our patients were normal, healthy population and only 2% had known prior psychiatric illness.

• This finding suggests that pesticide poisoning is more common among normal population than population with mental disorders in Bangladesh.

• On the other hand poisoning by drugs are common in the west having prior mental illness.
In absence of diagnostic laboratory facility for poison detection visual inspection and identification was made in this study.

The offending pesticide was brought by requesting the accompanying person to bring the container left in the vicinity of the occurrence or by requesting the victim to bring a similar agent used for the poisoning after recovery.

Our study shows that the cause of death were acute cholinergic crisis in 8(62%) cases and respiratory paralysis in 5(38%) cases. The situation could be improved by introducing ICU care to OP poisoning cases.
Conclusion:

- It is a simple observational study and though scientific diagnostic measurement was not possible it may reflect the total pesticide poisoning situation of Bangladesh and much work is needed to tackle the situation like:
- Survey in the community is necessary to assess the magnitude of pesticide poisoning in Bangladesh.
- National guideline about treatment should be introduced.
- Awareness of the public should be created for its prevention, for immediate first aid measures and quick hospital admission.
- Awareness of the doctors should be created by giving adequate importance of pesticide poisoning in undergraduate curriculum as well as by continued medical education.
- Monitoring and providing immediate prompt advice to physicians and patients.
Thanks