Original Article

Pattern of Poisoning Cases in a Tertiary Hospital in Bangladesh

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Abstract

Background: *Poisoning with various substances is a global problem. It is one of the most important reasons for emergency admission in the hospital. The earlier the initial resuscitations, gastric decontamination and use of specific antidotes, the better is the outcome. Epidemiology of poisoning differs from region to region. This study was carried out to determine the pattern and severity of poisoning in a tertiary care hospital.* ***Objective:*** *To characterize the poisoning cases admitted in Enam Medical College Hospital.* ***Materials and Methods:*** *All cases admitted to the emergency department of Enam Medical College Hospital during the period of April to December, 2010 were evaluated retrospectively. We reviewed data obtained from the hospital medical records and included the following factors: demographic characteristics, etiology and outcome of the acutely poisoned patients. Total 84 poisoning cases were found and they were included in the study.* ***Results:*** *The overall case fatality rate was 3.5%. More detailed data from 2010 reveals that two-thirds of the patients were 20-30 years old, 53% male and 47% female. Organophosphorus was the most common cause (73.9%) followed by unknown poisoning (9.5%), sedative (5.9%), harpic (4.7%), aluminium phosphide (2.4%), savlon (1.2%), paracetamol (1.2%) and amitryptiline (1.2%). 90.5% cases were suicidal and 9.5% were homicidal.* ***Conclusion:*** *This study provides important information on the characteristics of the poisoning in this region. Community education about the danger of the drugs and reduction of exposure to pesticides are recommended.*

Key words: *Poisoning, Suicidal, Homicidal*

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Introduction

Acute poisoning is recognised to be a problem of mainly developing countries. The nature of poisons used varies in different parts of the world and may vary even in different parts of the same country depending on the socioeconomic factors and cultural diversity. Management of these critically ill patients will greatly improve if the common causes of poisoning are properly defined.[1] Pesticide self-poisoning accounts for about one-third of the suicidal cases in the world. The proportion of all suicides using pesticides varies from 4% in the European region to over 50% in the Western Pacific region, but this proportion is not concordant with the volume of pesticides sold in each region. It is the

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pattern of pesticide use and the toxicity of the products, not the quantity used, that influences the likelihood that they will be used in acts of fatal self-harm.[2]

The latest estimate by a World Health Organisation task group indicates that there may be 1 million serious unintentional poisonings each year and in addition 2 million people are hospitalized for suicidal attempts with pesticides.[3] This necessarily reflects only a fraction of the real problem. With the progress in the industrial and agricultural field and advances in medical sciences a vast number of insecticides have become available, which on exposure may produce severe toxicity. Information available in our country is limited, with regard to acute poisoning in adults, including hospitalized patients.[4-6] On the basis of a survey of self-reported minor poisoning carried out in the Asian region, it is estimated that there could be as many as 25 million agricultural workers in the developing world suffering an episode of poisoning each year. The aim of our study was to investigate the etiological and demographical characteristics and outcome of acute adult poisoning cases admitted to Enam Medical College and Hospital, Savar, Dhaka.

Materials and Methods

This retrospective study was performed on 84 poisoning cases admitted to Enam Medical College Hospital from April to December 2010. Data were collected from medical records of patients and transferred to data entry format for evaluation. Consent was taken from the hospital authority.

Inclusion criteria: Inpatients presenting with primary diagnosis of acute poisoning. Inclusion was based on a clinical diagnosis of acute poisoning. Poisonings were defined as exposure to substances in assumed toxic amounts.

Exclusion criteria: Inpatients having snake bite, drug reactions, food poisoning, hypertension, cardiac disorders and diabetes mellitus were excluded from the study.

The literature supporting the study was collected and analyzed. The different sources used to collect the literature were Micromedex drug information services and various websites such as www.pubmed.com, www.sciencedirect.com and DOAJ.

Results

From evaluation of all admitted cases in Enam Medical College Hospital during the study period we found 84 poisoning cases. It is 4% of total hospital admissions. The types of poisons are shown in details in table I.

Table I: Types of poisoning cases

Types of poisons	Numbers (n=84)	Percentage
Organophosphorus compound	62	73.9%
Unknown	8	9.5%
Sedatives	5	5.9%
Harpic	4	4.7%
Aluminium phosphide	2	2.4%
Savlon	1	1.2%
Paracetamol	1	1.2%
Amitryptilline	1	1.2%

Discussion

Poisoning exposure was grouped into 8 toxic substances. Pharmaceutical or medicinal drug use, sedatives, recreational drug use and chemical exposure were also captured and categorized into intended groups, which included suicide abuse, misuse, unintentional exposure, therapeutic use and adverse drug events (ADE). Males were affected more (53%). This finding is similar to that of other studies done in Auckland, central Sri Lanka and India.[7-9] The high incidence of poisoning in males may be due to the high exposure to stress and strain. Occupational poisoning occurs due to inappropriate handling (e.g., spraying with high concentration). The signs and symptoms usually occur due to exposure duration, spraying against wind or lack of personal protection.[10]

Self-poisoning is one of the oldest methods tried for committing or attempting suicide. There are reports available from different parts of the world highlighting various substances abused for acute poisoning and their toxicity. From western countries,

drugs (sedatives and analgesics) have been reported as the most common substances abused, with mortality rates varying between 0.4% and 2.0%.[11-13] Reports available from certain Asian (Pakistan and Sri Lanka) and African countries (Uganda) describe organophosphates (crop sprays) and drugs as the commonly abused toxic substances, with reported mortality rates varying from 2.0% to 2.1%.[14-16] The mortality or morbidity in any case of acute poisoning depends on a number of factors such as nature of poison, dose consumed, level of available medical facilities, time of interval between intake of poison and arrival at hospital, etc.

The results of our study illustrated that total 84 patients were hospitalized due to acute poisoning. Of these, 3.5% patients died. The findings of this study agree with various reports from developing and developed countries, which reveal a considerable increase in mortality and morbidity due to poisoning. This study also revealed a higher incidence of poisoning in males than females in all age groups, corroborating other studies.[17-19] There are findings of some other countries where the female has a preponderance.[20,21] The majority of incidences in males was from the age group of 20-30 years. The males are more affected due to excess exposure to occupational hazards and stress or strain as compared with females in this part of the world.

The present study revealed that self-poisoning (suicidal 90.5%) is the most common method. Results of a 10-year study in Chandigarh revealed that intention was suicidal in 72%, followed by accidental (25%).[17] Similar observations were made by other researchers.[20-26] An increase in the number of self-poisonings may be due to many factors such as gradually increasing unemployment, urbanization, disruption in family support system and economic instability. Suicide attempts among adults, especially in the age group of 21-30 years, could be due to lack of employment, broken family, failure in love affairs, frustrations, inadequacy to cope up with some immediate situation, impulsive behaviours, stress due to job and family, etc. Recent studies have shown that a high mortality is due to depression leading to suicide.[27-29] Results of some studies reported that many deaths are due to organophosphate pesticides and occur in the young, economically active age group.[30-32] It has been established that consistent exposure, especially to organophosphate pesticides, produces a distinct pattern of physical symptoms and has psychological and neurobehavioral effects such as anxiety, depression and cognitive impairment.[33,34] The morbidity and mortality due to acute poisoning have been mainly due to agrochemicals, which appear to be a by-product of the "green revolution" in South Asia. There are few published studies of agrochemical poisoning in developed countries. A review of pesticide poisoning deaths in England and Wales found that pesticides were responsible for only 1.1% of poisoning deaths over a 44-year period.[35,36] A Minnesota regional poison centre consulted on 1,428 cases in 1988, in which a pesticide was the primary substance, accounting for approximately 4.5% of all poisoning cases.[37] Another study revealed that the maximum cases of self-poisoning were due to organophosphate pesticides in South India, which is different from the results of North Indian studies. Results of a prospective study (559 cases) conducted at a medical college hospital in Rohtak, Haryana, North India, revealed that aluminium phosphide was the primary substance accounting for approximately 67.8% of all poisoning cases.[22] This could be because of easy availability of this pesticide in this region of India.

Poisoning due to organophosphate was also the most common poisoning in North India before 1980s.[17,18,27] A study of 117 cases of poisoning reported from Tamilnadu during 1992-1993 showed that most common poisonings (63%) were due to a plant called "Oduvan", and agrochemicals accounted for only 2.2% of the cases.[23] Results of that study shows that a higher mortality rate was due to organophosphate pesticides. This may be because of uncontrolled sales and use of these agents.

Easy availability of insecticides is responsible for high incidence of pesticide poisoning in admitted poisoning cases in Enam Medical College Hospital. We should emphasize the need to control the problem on a collaborative basis by all concerned, including governments, agrochemical industries, international agencies, scientists and victims. Future research to improve medical management and find effective ways of reducing the

incidence of self-harm, together with more widespread provision of interventions proven to be effective, could rapidly reduce the number of deaths from self-poisoning in the developing world.

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