

Short Communication

Organophosphorus Compound Poisoning Deaths In Children – An Autopsy Survey from Manipal

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ABSTRACT

A 16-year retrospective autopsy-based study (1992-2008) was undertaken by the department of forensic medicine of Kasturba Medical College, Manipal to ascertain the profile of fatal organophosphorus compound poisoning in the paediatric age group. Out of 2532 autopsies performed during the period, twenty-four victims formed the material for the study.

The age group of 13-18 years was most commonly affected, with a significant male preponderance. Many of the cases were suicidal in nature. Nearly half of the victims survived for a period of more than a day after consuming poison. A seasonal variation was noticed, with many cases being reported in the summer months.

Key Words: Organophosphorus compound; Paediatric poisoning; Suicide

Introduction

Poisoning is defined as exposure of an individual to a substance that can cause symptoms and signs of organ dysfunction leading to injury or death.¹ Among children and adolescents, poisoning has been identified as one of the major causes of hospital emergency presentations and admissions in developed countries, and a major health problem in developing countries.²⁻³ Accidental poisoning is implicated in about 2% of all injury deaths in children in developing countries.⁴ Pharmaceutical agents such as analgesics, anti-inflammatory drugs, psychotropic drugs such as antidepressants, and benzodiazepines, as well as non-medicinal substances such as pesticides, other chemi-

als, and household products including bleaching powder and caustics are found to be common causes of poisoning among children.⁵⁻⁶

Acute childhood poisoning is an important cause of morbidity and mortality in children. It can be hypothesized that based on availability, certain types of substances used for poisoning would be more prevalent in specific geographic locations. For example, children and adolescents in rural areas would be more likely to be exposed to agricultural and other chemicals, while exposure to pharmaceutical agents and industrial chemicals would be more in urban areas.

The objective of the present study was to determine the demographic data, manner, seasonal variation and the duration of survival in fatal paediatric poisoning cases in this region (Manipal), and to suggest some remedial measures to decrease the incidence of poisoning in paediatric age group.

Materials and Methods

This retrospective autopsy survey was conducted by the Department of Forensic Medicine, Kasturba Medical College, Manipal. Autopsy and other related records from 1993 to 2008 (sixteen years) were analyzed. Twenty four paediatric victims (under the age of 18 years) of organophosphorous compound poisoning formed the material for the present study. Data was retrieved from the autopsy files, police inquest reports and hospital case records. The chemical analysis reports of the viscera were also scrutinized to confirm the diagnosis of organophosphorous compound poisoning.

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Results

A total of 2532 medicolegal autopsies were conducted during the study period, out of which 489 were cases of poisoning. Thirty-one poisoning victims were under the age of 18 years. Twenty-four deaths were due to organophosphorous compound poisoning. The age group of 13-18 years was most commonly involved (Fig 1). Sixty-two percent of victims were male, while 38% were females. More than 80% of the decedents allegedly died due to suicidal poisoning (Fig 2). Nearly one-third of the victims consumed poison during the summer months (Table 1). Most of the victims survived for less than 24 hrs after consuming poison (Table 2).

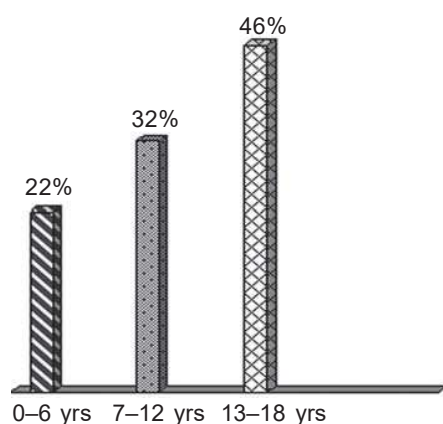


Fig 1: Age Distribution of Victims

Discussion

Poisoning in children is an important health problem. The accidental exposure to a toxic substance by a child represents a complex interplay of host, agent and environmental factors.¹ Host factors associated with unintentional poisoning include young age, male sex, and curious personality,⁷ whereas intentional poisoning is more common in female sex and among adolescents.⁸ Drugs, pesticides and kerosene oil are amongst the common agents implicated in acute poisoning in children in this country.⁹

In the present study, it was found that organophosphorus compound poisoning constituted roughly 5% of the total poisoning deaths, and 77% of the paediatric poisoning fatalities. Thus organophosphates are major contributors to poisoning deaths in childhood. Easy availability, awareness about the toxicity of these compounds, and the relatively low cost may be the reason for this prevalence. Nearly 46% of victims were in the age group of 13-18 years, and the manner of death was suicidal in majority of the cases. This may be because of issues such as

jilted love, academic pressure, hormonal changes, fear of the future, peer pressure, etc., which are at their maximum during this period. Other studies also have reported similar age groups to be the most vulnerable, while a few studies suggest more fatalities in the below-5-year age group.¹⁰⁻¹² Male preponderance, and high incidence during summer months seen in our study concur with many other studies.¹⁰⁻¹² More than half of the victims survived for less than one day after exposure, which highlights the fact that early and energetic management should be aggressively pursued.

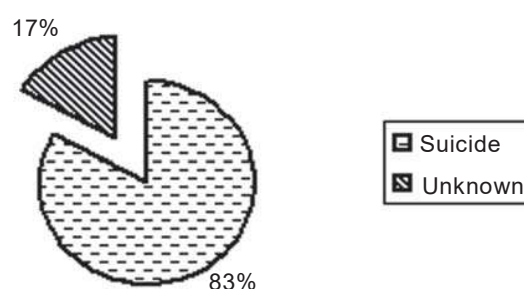


Fig 2: Manner of Poisoning

Table 1 Seasonal Variations in the Incidence of Poisoning

Season (n=24)	No. of Cases	Percentage
Summer (Mar-Jun)	09	37.5
Monsoon (Jul-Oct)	07	29.2
Winter (Nov-Feb)	08	33.3

Table 2 Duration of Survival After Exposure

Survival Period	No. of Cases	Percentage
0-12 hrs	06	25
12-24 hrs	07	29.2
>1 day	11	45.8

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