Original Article

One Year Experience of Poisoning Patients in a Medical Ward of a Tertiary Care Hospital

Pattern of Poisoning in Patients

Syed Hashim Raza, Ali Imran, Wajih ur Rehman, Ashfaq Ahmad and Qazi Masroor Ali

ABSTRACT

Objective: To determine the etiological and demographic pattern of poisoning among admitted patients in a tertiary care hospital of southern Punjab.
Study Design: Retrospective Observational study
Place and Duration of Study: This study was conducted at the department of Medicine (Medical unit 1), Bahawal Victoria Hospital (BVH), Bahawalpur from January, 2019 to December, 2019.
Materials and Methods: All cases of acute poisoning admitted in Medical unit 1, through Accident & Emergency (A&D) department of BVH, Bahawalpur from January, 2019 to December, 2019 were included in the study. The etiological and demographic details were documented by using a specifically designed proforma in the light of their medical record files.
Results: Out of 342 patients of acute poisoning enrolled in the study, 251 (73.4%) were females and 91 (26.6%) were males. The overall mean age was 23.58 years. Most cases of acute poisoning presented among 21- to 30-year of age group (44.4%) followed by 13- to 20-years of age group (41.8%). Majority of subjects were married (62%). The most common agent used for poisoning was paraphenylene diamine (PPD / Kala patthar) (49.4%) followed by organophosphorus (OP) compounds (40%). The reason of poisoning in majority of cases (96%) was suicidal attempt. Overall mortality among poisoning patients was 19.3%. PPD poisoning emerged the major contributor of mortality in 87.9% of cases.
Conclusion: The majority of poisoning cases in our setup occurs in females of younger age group for suicidal attempt carrying substantial mortality. PPD (Kala Patthar) being the commonest and most lethal poison in such cases.
Key Words: Poisoning, paraphenylene diamine, organophosphorus compounds, suicidal attempt, mortality

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INTRODUCTION

Poisoning is known as the potential related to chemical substance in doing adverse to the body.[1] Changes in lifestyle and social behaviors have impacted increase in poisoning cases in the recent decades.[2] Poisoning is also considered a frequent cause of medical emergency and admissions. As per World Health Organization, more than 3 million cases of poisoning are reported annually, out of which, a quarter million die. It is also seen that 99% of the deaths are reported in developing countries.[3] Available data on suicide suggests that in Pakistan about 8 per 100,000 commit an act of deliberate self-poisoning per year.[4]

Department of Medicine, Bahawal Victoria Hospital Bahawalpur.

Correspondence: Dr. Syed Hashim Raza, Assistant Professor of Medicine, Bahawal Victoria Hospital, Quaid e Azam Medical College, Bahawalpur
Contact No: 03086598842
Email: shashimraza66@gmail.com

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Knowledge about the pattern of poisoning among different regions is thought to be helpful in timely diagnosis and management of frequently occurring cases in the region along with initiating appropriate strategies of prevention. Not much is known about trends of acute poisoning in our region among adult population. This study was done to know the pattern as well as outcome of acute poisoning among adults admitted in a medical ward of a tertiary care hospital, Bahawal Victoria Hospital, Bahawalpur.

MATERIALS AND METHODS

This was a retrospective observational study, conducted in Medical Unit-1 of Bahawal Victoria Hospital (BVH), Bahawalpur from Jan., 2019 to Dec., 2019. Approval from institutional Ethical and Research committee was taken for this study.

All adult (≥13 year old) patients admitted in Medical Unit-1 during the aforementioned period through emergency department of BVH, Bahawalpur with history of acute poisoning due to various agents were included in the study. Cases with pre-existing renal or cardiac disease, food poisoning, insect/snake bites, poisoning due to some unknown agent and patients

having doubtful history of poisoning were excluded from the study.

A retrospective analysis of all the cases regarding age, sex, marital status, reason of poisoning, type of poisoning agent and mortality were documented in a specifically designed proforma with the help of hospital medical record files of the patients. Data was presented in terms of frequencies and percentages. SPSS version 20.0 was used for data analysis.

RESULTS

A total of 5344 patients were admitted in Medical Unit-1 during the study period. Out of these, 342 patients of acute poisoning (6.4% of total admissions) fulfilling the selection criteria were enrolled in the study. Among these 342 patients, 91 (26.6%) were males and 251 (73.4%) females, with overall male to female ratio of 1: 2.75. There was wide variation of age ranging from a minimum of 13 to 65 years, with mean age of 23.58 years. The majority of patients (86.25%) were less than 30 years of age.

Regarding the marital status, two hundred and twelve (62%) were married and 130 (38%) were unmarried. The reason for acute poisoning was mainly suicidal in 328 cases (96%), followed by accidental 13 cases (3.8%) and homicidal one case (0.2%).

In the present study, the commonest poisoning agent was paraphenylene diamine (169 cases, 49.4%) followed by organophosphorus compounds (137 cases, 40%), acid ingestion (20 cases, 5.8%), wheat pill (09 cases, 2.6%), bleach (04 cases, 1.2%), rodent killer (02 cases, 0.6%) and cloth dye (01 case, 0.3%).

Table No.1: Characteristics of Patients (n=342)

Characteristics		Number of Patients (%)
Gender	Male	91 (26.6%)
	Female	251 (73.4%)
Age (Years)	13-20	143 (41.8%)
	21-30	152 (44.8%)
	31-40	37 (10.8%)
	41-50	7 (2.0%)
	51-60	2 (0.6%)
	61-70	1 (0.3%)
Marital Status	Married	212 (62.0%)
	Unmarried	130 (38.0%)
Reason of Poisoning	Suicidal	328 (95.9%)
	Accidental	13 (3.8%)
	Homicidal	1 (0.3%)

Eight hundred and seventy-nine deaths were documented in the ward during the study period, out of which 66 deaths were contributed by acute poisoning cases representing 7.5% of the total all cause morality of the ward. On the other hand, mortality among acute poisoning cases in our study was 19.3% (66 died out of 342 cases). Paraphenylene diamine (PPD) was major contributor to mortality in 87.9% of cases (58 out of 66 deaths), followed by organophosphorus compounds in 09% (06 out of 66 deaths), acid ingestion in 1.5% (01 out of 66 deaths) and wheat pill in 1.5% (01 out of 66 deaths).

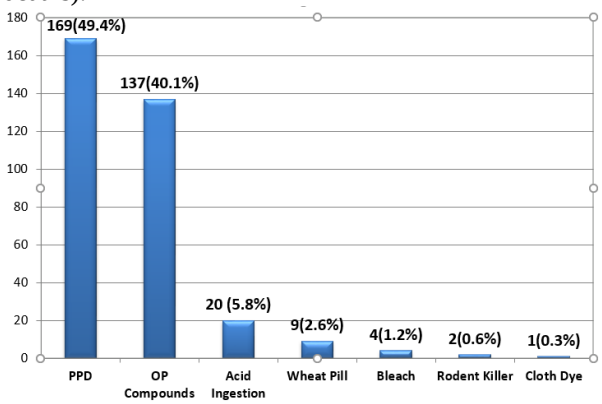

Figure No.1: Frequency of Poisoning Agents Among Patients (n=342)

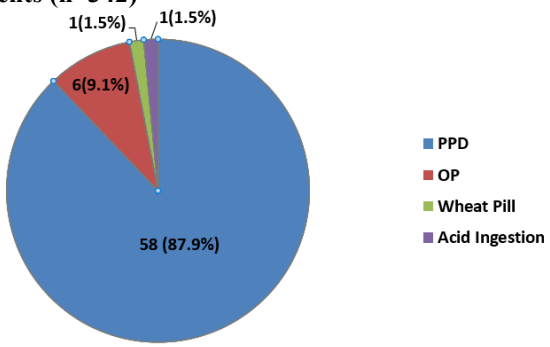

Figure No.2: Mortality Among Poisoning Agents (n=66)

DISCUSSION

Trends of poisoning vary greatly among different populations. Management of cases with acute poisoning may significantly improve if we know the patterns and causes of poisoning among different set of populations.

In our study the acute poisoning cases accounted 6.4% of the total admissions of the ward, which is a substantial figure to highlight the burden of poisoning cases in our set up. Paudyal BP[5] has also reported 4% of total medical admissions were contributed by acute poisoning cases in his study. Frequency of poisoning reported of medical emergency departments is noted from 0.2 to 1% of total emergency department visits around the world.[6-8] Developing countries report the major bulk of poisoning, representing a 13 fold increased incidence in comparison to developed countries.[9]

Regarding gender comparison, we noticed significantly high proportion of females being victim of acute poisoning (male to female ratio of 1:2.75). The fact that females are more vulnerable to poisoning is also observed in Nepal,[5] India,[10] Turkey,[11] Iran[12] and

Thailand.[13] Illiteracy, poverty, poor religious knowledge, domestic stresses, traditional female conflicts among family and male dominated society are key factors responsible for female preponderance in such cases in our country.

In the current research, most poisoning cases (86%) were below the age of 30 years. Similar findings were observed in national[14]and international studies.[15] Predominant young population getting affected by poisoning could be due to reasons such as impulsive behavior, love affairs resulting in failure, study pressure, domestic issues and professional problems like dissatisfaction.

In the current study, poisoning cases were more common in married subjects (married to unmarried ratio being 1.62: 1). Similar marital preponderance was recorded by Khan M et al.[14] Early age marriages, marital conflicts within families and economic problems may be some contributing factors responsible for this observation.

Suicidal attempt (96%) was the commonest reason of acute poisoning in our study. Our findings matched with other local[16,17] and international studies[12] in which 80 to 98% of cases of acute poisoning were attributed to suicidal attempt. The exceptionally high suicidal tendency in our study is a question mark on true practice of Islam in our setup, which strongly condemns and strictly prohibits intentional self-destruction.

Commonest agent for acute poisoning in our stude was PPD (commonly called Kala Pather in the native language) contributing to almost half (49.4%) of the total cases, followed by OP compounds (pesticides) poisoning which accounted 40% of the total burden. Several Pakistani studies conducted in different parts of the country has concluded that OP compounds are the most frequent agents used in acute poisoning cases.[15] The same observations are found in studies conducted in India,[18] Nepal[5] and Sri Lanka.[19] Contrary to the aforementioned heavy evidences regarding frequency of OP compounds as poisoning agent, the current study has documented PPD as the most frequent poisoning agent due to certain reasons. Khan MA et al[10] in our region rightly pointed out the rapidly rising trend of this problem in our region. They reported more than 1250 cases of Kala Pathar poisoning over a brief period of sixteen months from the data collected from Combined Military Hospital (CMH) Bahawalpur and Bahawal Victoria Hospital (BVH), Bahawalpur. Another study conducted by Qasim AP et al[20] in Bahawalpur has also reported 109 cases of Kala Pathar poisoning in a period of just three months. Keeping in view such large number of reported cases it was quite expected to become the commonest poisoning agent in use. The same has been proved in our study, where Kala Pather / PPD has attained the top most position as acute poisoning agent. We have not found any national or international study comparing frequency of PPD usage with other poisoning agents on extensive review of literature. Therefore, to the best of our knowledge this is the first study to document this bitter fact in our region. Hence, countrywide and especially in the region of southern Punjab more studies are required to confirm our findings. Easy availability, low cast and its presence as a common household item for hair dye are some important reasons responsible for its rapidly rising trend as poisoning agent.

Acute poisoning cases contributed 7.5% of the total all cause mortality of the ward in our study, which is a significant figure to note in the background of potentially preventable problem. The overall mortality among poisoning patients in this study was about 19%. A higher mortality among poisoning patients were observed in similar studies conducted at Sargodha[17] (27%) and Peshawar[21] (23%).Mortality in our study is due to a large number of PPD victims which contributed about 88% of the total mortality. The better outcome of poisoning cases may be due to different nature of poisoning agents and availability of better health care facilities to deal such cases in those regions.

Current study shows PPD as a newly emerging domestic poison in this region. Keeping in view the rising trend of this poison, it is mandatory to launch public awareness campaign regarding toxic effects of hair dye through electronic and print media. The sale of kala pather should be legally banned by the concerned authorities to save precious lives.

CONCLUSION

Acute poisoning cases contributes appreciably in total ward admissions. The all-cause mortality of the ward is also significantly contributed by these cases. The majority of poisoning cases in this study were seen in females of younger age group for intentional self-harm. Paraphenylene diamine is the most commonly used agent for acute poisoning in this series. A significantly high mortality is noted among the poisoning cases with major contribution from paraphenylene diamine (Kala Pather) ingestion.

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Author's Contribution:

Concept & Design of Study:	Syed Hashim Raza
Drafting:	Ali Imran, Wajih ur Rehman
Data Analysis:	Ashfaq Ahmad, Qazi Masroor Ali
Revisiting Critically:	Syed Hashim Raza, Ali Imran
Final Approval of version:	Syed Hashim Raza

Conflict of Interest: The study has no conflict of interest to declare by any author.

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