Original Article

Pattern, Incidence and Mortality Rate of Acute Poisonings at Karachi- One Year Study

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ABSTRACT

Background: Poisoning is a socio medical problem in almost all parts of the world. The prevalence of poisoning, types of poison and the associated morbidity and mortality varies from one country to another and even in one country it varies from one place to another and it may change over a period of time.

Objective: To determine the pattern, incidence and mortality rate of acute poisoning by various agents, the types of poisoning, vulnerable age group, outcome of patients with poisoning, and to find out the most common type of poison used in Karachi in study period.

Study Design: Retrospective Study.

Place and Duration of Study: This study was conducted at National Poisoning Control Center (NPCC), Jinnah Post Graduate Medical Center, Karachi from 01-01- 2001 to 31-12- 2001.

Materials and Methods: A total of 1472 patients of both sex and age ranged from 8 years or older reported with acute poisoning during the study period. Detailed history and examination regarding the nature of poisoning were taken. Relevant investigations for purpose of diagnosis were carried out. Other relevant information was obtained mainly by retrieving hospital records. Data was noted on predesigned proforma.

Results: Total 1472 patients were admitted with poisoning during the study period.

Out of them 897 (61%) were males while 575 (39%) were females. Male female ratio was 1.5:1.

Our study showed that highest number of patients 505 (34.30%) were belonged to age group 21-30 years followed by 485 (32.94%) in 15-20 years and 245 (16.64%) in 31-40 years.

There were 59 poisoning related deaths among the 1472 patients, and of whom 45/59 deaths were of organophosphorous compounds poisoning. Thus present study showed a mortality rate for poisoning 59 (4%).

Conclusion: Acute poisoning is a significant public health problem affecting mainly young adults. Main substances responsible for acute poisoning are organophosphorous insecticides and drugs.

Key Words: Poison, Pattern, acute poisoning

INTRODUCTION

By definition, poison is any product or substance capable of producing damage or dysfunction in body by its chemical activity. It can enter the living body in various ways to produce general or local effects (limited to the eyes, skin, lungs, etc). Poisoning can be accidental, suicidal, homicidal or occupational. Poisoning is a qualitative term used to define the potential of a chemical substance in acting adversely or deleteriously on the body[1]

Acute poisoning is a major public health issue in many countries around the world. In recent times, it is increased due to advancement in technology, social development and subsequently resulted in the availability of most drugs and chemical substances in the community. These chemical substances pose a significant threat due to the extensive use in medicine, cosmetics, hydrocarbons and non-medicinal products. Organophosphorous compounds (insecticides) have lead to a significant rise in numbers of fatal poisoning exposures. Poisoning was responsible for around 600,000 deaths in 1990 in the developing world [4]. The estimation done by a WHO task group indicates that there may be one million serious unintentional poisonings each year and in addition 2 million people hospitalized for suicide attempts with pesticides[2].

Drug overdose is second only to motor vehicle accidents as a leading cause of injury related deaths in United States[3]. Due to easy availability and low cost pesticides, rodenticides, chemicals and various drugs are used mainly for suicidal poisoning in developing countries. Drug abuse, overdose and accidental ingestion may be the other cause. In United States unintentional medication related deaths (drug overdose poisoning) doubled from approximately 11,000 deaths in 1999 to 26,000 in 2006 [5].

Therefore, an evaluation of poisonings cases to reduce fatality and highlight the importance of 'prevention is better than cure'are crucial in reducing the burden of poisoning related injury and deaths in any country. It is important to know the nature and severity of poisoning, and evaluate the acute poisoning situation in our area in order to take prompt appropriate treatment to save life and reduce morbidity and mortality.

MATERIALS AND METHODS

This retrospective study was conducted at National Poisoning Control Center (NPCC), Jinnah Post

Graduate Medical Center, Karachi from 01-01- 2001 to 31-12- 2001.

This was a retrospective study, included a total of 1472 Patients (cases) of both sex and age ranged from 8 years or older diagnosed with acute poisoning admitted in National Poisoning Control Center (NPCC), Jinnah Post Graduate Medical center, Karachi.

Data Collection and analysis: Material were collected from the cases admitted with acute poisoning in medical ward/ National Poisoning Control Center (NPCC), Jinnah Post graduate Medical center, Karachi over a period of one year. 1472 cases were taken and the type of poison consumed, age and sex and outcomes of the victims with poisoning were assessed.

All patients had their detailed history taken either from patient or from patient‘s relatives about the agents involved in the exposure and confirmed with typical clinical manifestation of acute poisoning.

Data regarding age, sex, circumstances of poisoning, name of poisonous substances, chemical type, severity and outcome were collected on pre-structured proforma. Circumstantial evidence such as empty bottles and tablets were collected for general physical examination and systemic examination of patients.

The diagnosis of nature of the poison consumed was based on history (given by relatives, police papers) medical case papers with clinical manifestation, and presentation of the remaining material/ container of substance, and confirmed by laboratory findings and reports from Chemical Examiner Karachi (Police cases only).

The variables including demographical characters of patients, age, gender, causative agents/ types of poisoning and outcome were recorded and analyzed.

RESULTS

During one year study period, 1472 cases of acute poisoning were admitted in the National Poisoning Control Center (NPCC), Jinnah Post Graduate Medical center, Karachi.

Out of 1472 cases of poisoning under study, 897 (61%) were males while 575 (39%) were females. Male female ratio was 1.5:1.

Age range of all patients was 8-60 years and above. Maximum number of patients 505

(34.30%) belonged to age group 21-30 years. Majority of poisoning cases 556 belonged to younger age group 8-20 years. In age group between 15-20 years organophosphorous compounds poisoning cases and kerosene oil ingestion were maximum. In the age group between 21-30 years drug abuse and corrosive ingestion, unknown poisons, alcohol poisoning, snake bite, rat killer poison and organophosphorous compounds poisoning were maximum. In the age group between 31-40 years heroin, Dhatura poisoning and food poisoning were maximum. Opium poisoning was common in age group between 21-50 years.

The majority of poisoning cases 656 (44.56%) were due to Organophosphorous compounds followed by drug overdose. There was no significant gender difference in occurrence of Organophosphorous compounds poisoning. Drug overdose as a case of poisoning was seen in 11.48% of cases only. Drugs commonly used were analgesics, morphine, diazepam, barbiturates, antipsychotic drugs and multi drug ingestion. Poisoning with unknown substance was third leading cause (11.07%) followed by heroin poisoning (10.25%), corrosive ingestion (06.65%), snake bite (03.60%),

Table No.1: Causative agents according to age groups

Types of Poisoning	8-14 years	15-20 years	21-30 years	31-40 years	41-50 years	51-60 years	>60 years	Total
Organophosphorous compound insecticides	34	290	236	60	21	11	4	656
Drug overdose	7	58	67	21	14	1	1	169
Unknown poisoning	6	37	50	26	13	19	12	163
Heroin capsule	0	9	48	72	17	3	2	151
Corrosive ingestion	6	32	38	9	4	6	3	98
Snake bite	8	15	18	7	5	0	0	53
Kerosene oil	1	27	9	7	2	1	0	47
Rat killer ingestion	0	9	16	11	2	2	0	40
Dhatura poisoning	0	3	7	15	9	4	2	40
Insect bite	3	1	7	5	2	1	1	20
Food poisoning	6	2	2	5	1	0	0	16
Alcohol poisoning	0	2	3	2	1	0	0	8
Scorpion bite	0	0	3	4	1	0	0	8
Opium	0	0	1	1	1	0	0	3
Total no. of poisoning cases	71 (4.82)	485 (32.95)	505 (34.3)	245 (16.64)	93 (6.32)	48 (3.26)	25 (1.7)	1472

Table No.2: Types of poisoning, Gender distribution and their outcomes

Types of Poisoning	Total poisoning cases	Total %age of poisoning cases	Males No. of patients	Female No. of patients	Improved	Expired
Organophosphorous compounds	656	44.56%	331	325	611	45
Drug overdose	169	11.48%	77	92	168	01
Unknown poisoning	163	11.07%	122	41	159	04
Heroin	151	10.25%	142	09	151	0
Corrosive ingestion	98	06.65%	44	54	95	03
Snake bite	53	03.60%	44	09	52	01
Kerosene oil ingestion	47	03.19%	24	23	44	03
Rat killer ingestion	40	02.80%	27	13	40	0
Dhatura poisoning	40	02.80%	39	01	40	0
Insect bite	20	01.35%	18	02	20	0
Food poisoning	16	01.08%	10	06	16	0
Alcohol poisoning	08	00.54%	08	-	8	02
Scorpion bite	08	00.54%	08	-	8	0
Opium	03	00.20%	03	-	3	0
Total no. of poisoning cases	1472	100%	897 (60.93%)	575 (39.06%)	1413 (96%)	59 (4%)

kerosene oil ingestion (03.19%), rat killer ingestion & Dhatura poisoning (02.80%) and alcohol poisoning (00.54%) were found. Opium (00.20%) was the lowest.

Table No.3: Types of disposal of patient

Disposal	**Number of cases**	**Percentage (%)**
Discharge after management	1288	87.5(%)
LAMA*	125	8.5(%)
Died at hospital	59	4%
Total	1472	100

*LAMA: left against medical advice

The majority of poisoning cases 656 (44.56%) were due to Organophosphorous compounds followed by drug overdose. There was no significant gender difference in occurrence of Organophosphorous compounds poisoning. Drug overdose as a case of poisoning was seen in 11.48% of cases only. Drugs commonly used were analgesics, morphine, diazepam, barbiturates, antipsychotic drugs and multi drug ingestion. Poisoning with unknown substance was third leading cause (11.07%) followed by heroin capsule (10.25%), corrosive ingestion (06.65%), snake bite (03.60%), kerosene oil ingestion (03.19%), rat killer ingestion & Dhatura poisoning (02.80%) and alcohol poisoning (00.54%) were found. Opium (00.20%) was the lowest.
The physical symptoms and signs of cases varied according to poisoning substance used. Overall mortality in poisoning cases was 59(4%) while 125 (8.5%) were taken home against medical advice (LAMA) on reason of not bearing expenses. The cause of death in 45 cases of organophosphorous compounds cases were respiratory failure, pulmonary infection, pneumonia and septicemia leading to cardiac arrest. In most of the cases there was full recovery, very few cases 386 (26.22%) were registered with police or in medico legal section.

DISCUSSION

The present study showed that 1472 cases admitted in Medicine department National Poisoning Control Center (NPCC), Jinnah Post Graduate Medical center, Karachi from 1-1-2009 to 31-12-2009. Our study showed a male preponderance of poisoning cases (60.93% males compared to 39.06% females).Others workers had similar observation in their studies [6-11]. This reason of male preponderance in present study could be due to fact that males are main earning source of family and associated with increased tension and stress of day to day life in our society. However studies from Iran[12], Nepal[13] and Turkey[14] reported more cases of acute poisoning in females.
Our study showed that highest number of patients 505 (34.30%) %) belonged to age group 21-30 years followed by 485 (32.94%) in 15-20 years and 245 (16.64%) in 31-40 years. This is in agreement with findings of studies conducted by Maskey A et al[10] and Ghimire RH et al[15] had found maximum number of poisoning seen in age group 15-25 years and Bajracharya MR et[16] Senanayake N[17] Nhachi CF et al[18], Rostrup M et al[19] and Guloglu C et al[14] in 21 to 30 years. This age period forms the most active, productive and crucial period of life with a tendency to take risks in act of passion and apprehensions in life. Therefore they are subjected to stress and strains of life. It was also observed that the incidence of poisoning was decreased with the increasing age. Another study [20]

reported 30-39 years age group in 35% of poisoning deaths and yet another [21] reported 16-25 age group as mostly affected in 37% of poisoning deaths.

Poisoning has been regarded as leading cause of fatalities in rural and agricultural area worldwide[22-23]. According to WHO; 99% of fatal poisonings out of annual 251,881 occur in developing countries and particularly among agricultural workers[2]. Like in present study, in studies done in Pakistan[24-25] and other countries of Asia, organ phosphorous insecticidal poisons were most commonly responsible agents for toxicity in poisoning cases[26-29].

In the present study 656 (44.56%) cases were due to Organophosphorous insecticide poisons. Easy availability, cheap in price and accessibility of insecticides in this area is mainly due to agriculture. Kerosene oil ingestion cases counted 47(3.19%). Of the entire cases snake bite constituted 53(03.6%) and scorpion bite 8(0.54%) respectively.

The data used here is a bit old which might be the limitation of the study. But the results can be used as baseline for further comparison in both regionally and nationally.

There were 59 (4%) deaths poisoning related deaths among the 1472 inpatient cases in during study period, and 45(76.27%) of whom were of organophosphorous compounds poisonings.

Mortality rate for poisoning deaths (4%) in this study is very low as compared to other studies which reported higher mortality for 11% to 34% in poisoning cases[26,30,31]. The low mortality indicates good supportive care and quick referral to tertiary care hospitals.

CONCLUSION

Poisoning with higher incidence of organophosphorous compounds poisonings can be restricted by having a control and implementation of rules on their sale and distribution. Drugs should only be issued on prescription by registered medical practitioner's advice. The high incidences of poisoning can be checked by positive counseling with a view to prevent risk to young adults. For prevention of prescription misuse or drug overdose steps to reduce poisoning cases more education and training to all medical personnel with respect to safe prescribing practices and overdose prevention are suggested.

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