A Retrospective Analysis of Patterns, Severity and Clinical Outcome of Different Poisoning Cases in A Tertiary Care Teaching Hospital

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Abstract: *Poisoning is becoming a real health care burden in developing countries. An enhanced knowledge about poisoning cases can help to formulate better preventive and management strategies. The main aim of this study is to assess the incidence, patterns, severity, clinical outcomes and treatment patterns of poisoning cases.*
Materials and Methods: *A retrospective study was conducted on hospitalized patients admitted with poisoning. Data were collected from the registers kept in the medical records department after obtaining permission from medical superintendent.* ***RESULTS:*** *Among the 160 poisoning cases, males 92 were predominant. Majority of cases were in between 21-30 age . Supervasmol was consumed by more number of persons 55 (34.38%). According Poison severity scoring system 72(45%) cases were found to be minor, followed by moderate 63 (39.38%). In terms of clinical outcome, we have seen improvement in 109 (68.12%), 37 (23.12%) were discharged against medical advice; 8 (5%) were died and 6 (3.75%) were discharged with morbidity.*
CONCLUSION: *We conclude that all the cases were deliberate poisoning with the intention of suicide. Supervasmol poisoning is common in this locality, because of its easy availability from the general stores, and it should be controlled with the establishment of strict policies in its trading.*
Key words: *Poisoning, Poison severity scoring system.*

I.   Introduction

A poison is any substance, which when administered to the body through any route, produces ill health, disease or death while poisoning refers to a stipulation or a procedure in which an organism becomes chemically harmed by a toxic substance [1]. It has been estimated that about 5-6 persons per lakh of population die due to poisoning every year[3] The occurrence and deaths due to poisoning in developing countries have been increasing gradually in recent years [2]. Poisoning can take place in all areas and affect people of all age and income groups. Commonly, unintended poisoning is more usual in children, whereas suicidal poisoning is more customary in young adults [5]. Deliberate self-harm behavior may occur both in clinical and nonclinical samples. It is vital to know the nature, severity and outcome of acute poisoning cases in order to take up appropriate planning, prevention and management techniques [4]. In order to reduce deaths from self-harm require interventions to both lower the incidence of harmful behavior and improve medical management of acute poisoning [6]. The speed with which the person comes to clinical attention; the degree to which the poison's toxicity and patient's severity was understood; and the readiness of medical care to provide intense monitoring and treatment are the key factors that affect the outcome due to acute poisoning. Delay in diagnosis and/or improper management are often related to the severe morbidity and mortality associated with poisoning [7.] A majority of physicians depend purely on clinical signs and symptoms as a guide for diagnosis. However, the onset of symptoms may take some time to develop, by which time the toxicity might become irreversible or even fatal. In addition, subjective evaluation of clinical status by individual clinicians may differ in measurement of illness severity. Unfortunately, laboratory methods are not always accessible in the hospitals. Hence, various descriptive and prognostic evaluation scales are being used to predict the severity and mortality rates in poisoning. In the present study, we used poisoning severity score (PSS) to predict the severity of poisoning and compared the predicted results with the actual outcome. This PSS scoring system is simple, less time-consuming, and effective in an emergency situation to predict the severity and mortality of poisoning,

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thereby allowing more intensive monitoring and treatment [1]. As the poisoning is one of the major global health problems. Thus a retrospective assessment was undertaken in the current study to determine the patterns, severity and clinical outcomes of numerous poisoning incidents at tertiary-care teaching hospitals. Understanding the epidemiologic, demographic and socio-economic characteristics of poisoning, dominance of poisoning agents, and promoting the usefulness of severity scoring systems are of major importance, not only for providing intense monitoring, treatment and also for providing satisfactory public assistance on this matter.

II. Aims and Objectives:

The aim of this study is to assess incidence, the patterns, severity, clinical outcomes and treatment patterns among the poisoning cases.

III. Materials and Methods:

A Retrospective study was conducted in Rajiv Gandhi Institute of Medical Sciences (RIMS), a tertiary care teaching hospital, Kadapa, Andhra Pradesh. We have collected the two months data (January-February 2017) of in-patients from medical record department after obtaining permission from medical superintendent. During this study, treatment charts, nursing notes, laboratory reports and discharge summaries were reviewed. Sting bite and food poisoning cases were excluded from the study.
Data was analysed based on socio demographic details like age, sex and type of poisoning, duration of hospital stay, social habits and outcome.

Severity score was assessed by using poison severity scoring (PSS) system [8]. PSS is a standardized scale for grading the severity of poisoning and allows qualitative evaluation of morbidity caused by poisoning. It is based on the severity of the symptom at the time of presentation.

Severity Grades

None (0): any symptom or signs related to poisoning;

Minor (1): mild, transient and spontaneously resolving symptoms;

Moderate (2): pronounced or prolonged symptoms;

Severe (3): severe or life threatening symptoms;

Fatal (4): death.

Statistical Analysis:

Statistical analysis was done by using descriptive statistics and chi square test. Probability of occurrence < 0.05 was considered as statistically significant.

IV. Results:

Among 11145 admitted cases, 160 cases were met the inclusion criteria with an incidence of 0.014. The average age of total patients was found to be 30.44 ($\pm$14.40) years. The average age of females was found to be 30.11($\pm$ 14.16) whereas average age of males was 30.433($\pm$14.45).
More number of cases was admitted during January month (92 cases (57.5%)), than February (68 cases (43.12%)) [table1]. Out of 160 cases, male 92(57.5%) admissions were predominantly more than females (68 (42.5%) cases) [table 2].
In age groups, Majority of cases were in between 21-30 age group i.e. 65 (40.6%) cases followed by 11-20 years about 31 (19.30%) cases [Table3].
Among the type of poisoning, 55 (34.38%) persons were consumed supervasmol followed by organophosphorus i.e. 49 (30.63%) persons. [Table 4].

The severity of illness was determined and categorized as per the indicators-PSS system. According to this, 72(45%) cases were found to be minor, followed by moderate 63 (39.38%) cases [Table5].

We have also assessed duration of hospital stay and found 65(40.6%) patients were stayed in hospital for 1-2 days, and the same number of patients were stayed in hospital for 3-4 days [Table6].

In terms of clinical outcome, we have seen improvement in 109 (68.12%) cases, 37 (23.12%) were discharged against medical advice; 8 (5%) were died and 6 (3.75%) were discharged with morbidity [table7]. Among 160 cases 31 (19.4%) cases were referred to psychiatry for counselling [Table 8].
We have assessed the social habits of the patients and found only 11 patients (6.9%) are smokers and 17(10.6%) were alcoholics [Table9].

In the treatment of poisoning, atropine (35%) was administered to the majority of patients followed by PAM (33%), Hydrocortisone (74%), Opti neuron (26%), Avil (42%), Sodium bicarbonate (23%) furosemide (13%), magnesium sulphate (11%), haloperidol (12%) and vitamin K (6%)

Among 35% of atropine received patients, 11% of patients had developed atropine psychosis.

Table 1: Age Wise Categorization of Poison Cases

AGE (YEARS)	NO. OF CASES	PERCENTAGE (%)
1-10	7	4
11-20	31	19.30
21-30	65	40.60
31-40	22	13.70
41- 50	21	13.12
51-60	6	3.75
61-70	8	5
Total	160	100

Average – 30.4435; SD-14.406; chi square statistic is 0.5261; p- value was0.468241 which was not significant

to $p < 0.05$

Table 2: Gender Wise Categorization

GENDER	NO OF CASES	PERCENTAGE
Male	92	57.50%
Female	68	42.50%
Total	160	100%

Table 3: Categorization Based On The Type Of Compound

TYPE OF POISON	NO.OF PATIENTS	PERCENTAGE(%)
OP compound	49	30.63
Supervasmol	55	34.38
Rodenticide	7	4.37
Tablet	20	12.50
Miscellaneous	29	18.13
TOTAL	160	100

Chi square statistic is 4.0845; P value is 0.0432 which was significant to P<0.05

Table 4: Distribution of Patients Based on The Duration Of Hospital Stay

DOH (DAYS)	NO. OF PATIENTS	PERCENTAGE
1-2	65	40.6
3-4	65	40.6
5-6	19	11.9
7-8	8	5
>9	3	1.9
TOTAL	160	100

Chi square statistic is 1.1208; p value is .28974 which was not significant at p<0.05

Table 5: Distribution of Patients on Personnel Habits

HABITS	NO. OF PATIENTS	PERCENTAGE (%)
Smoker	11	6.9
Alcohol	17	10.6

Table 6: DISTRIBUTION OF PATIENTS BASED ON THE OUTCOME

OUTCOME	NO. OF PATIENTS	PERCENTAGE (%)
Improved	109	68.12
Discharged with morbidity	6	3.75
Left against medical advice	37	23.12
Death	8	5
TOTAL	160	100

Table7: Distribution of Patients Based on Severity

SEVERITY	NO. OF PATIENTS	PERCENTAGE (%)
None	10	6.25
Moderate	63	39.38
Minor	72	45
Severe	7	4.38
Fatal	8	5.0
Total	160	100

Table 8: Distribution of Patients Based on Psychiatric Referral

PSYCHIATRIC REFERAL	NO. OF PATIENTS(n=160)	PERCENTAGE (%)
Yes	31	19.4
No	129	80.6
TOTAL	160	100

Chi square statistic- 2.8538; p value is 0.0911 which was not significant to P<0.05

Table 9: Distribution Of Patients Based On The Drugs Used For Treatment.

DRUG	NO. OF PATIENTS (n=160)	PERCENTAGE (%)
Atropine	56	35
PAM	33	20.62
Hydrocortisone	74	46.25
Optineuron	26	16.25
Avil	42	26.25
Sodium bicarbonate	23	14.37
Furosemide	13	8.12
Magnesium sulphate	11	6.9
Haloperidol	12	7.5
Vitamin K	6	3.75
Atropine psychosis	11	6.9

Table 10: Distribution of Patients Based on Month of Admission

MONTH	NO. OF CASES(n=160)	PERCENTAGE
January	92	57.5%
February	68	43.12%
Total	160	100%

V. Discussion

Poisoning is one of the leading causes of morbidity and mortality. In developed countries mortality rate from poisoning is 1-2%(9) but in developing countries where critical care resources are limited, and time delays are significant, mortality rate is high. In India reported mortality rate due to poisoning varies between 15-30 %. (10,11)

In our study incidences due to poisoning was predominant in males (57.5%) than females (42.5%) which was similar to a study conducted by Ramesh et.al where males(75.4%) were more than females(24.3%)(12,13,14,15) .A study conducted by Khadaka SB et.al found that 21-30 years of age group people have consumed poison mostly than others(16) and the same has been seen in our study (p=0.468241). We found, 21-30 years Males were most vulnerable subjects because of problems in family, studies, love affairs, marriage, life settlement and employment which make them feel stressed and to attempt suicide. (17,18,19)

We observed the consumption of Supervasmol as a poison was predominant (34.3%) followed by Organo phosphorous compounds (30.6%) in our study but in other studies like Praveen kumar et.al ;(34.5%) Dhanya

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et.al; (37.2%)   Op poisoning was the common type of poisoning. This shows that Super Vasmol was easily available, majority people aware that Vasmol can be used as a poison in our local region and there is no control over its selling.

We have assessed the duration of hospitalization and found majority (40%) of the cases stayed in hospital for 1-4 days and only 1.9% patients stayed for more than 9 days (p value =.28974). But in a study conducted by Swathi Acharya et.al revealed that, 84% of patients had stayed for 1-5 days and 13% for more than 8 days (p=0.01) (23)

In present study we assessed the severity by using PSS system in which we found 5% of fatal cases similar to a study conducted by Shoba churi et.al; where they found 4% of fatal cases (6). Minor 45% and moderate 39.38% were observed in our study but in other studies like Eswaran Maheshwari et.al have reported similar results. (24)

Patient outcomes were assessed, and we observed improvement in 68.12% of cases, 3.75% were referred to higher centres mortality was observed in 5% of cases. In Shobha churi et.al study they observed, improvement in 1.5% of cases, 2.3% were referred to higher centers, and 4.0% of cases were died. (6)

In the treatment of poisoning we observed the use of different antidotes in various poisoning cases, as there is no availability of specific antidote for Vasmol poisoning, symptomatic therapy is the commonly used approach in its management. (25) In our study we also observed symptomatic therapy among which the usage of Hydrocortisone injection in most of the cases (46.20%). other studies reported that the op compound was the common type of poison and atropine as a highly effective antidote.

VI. Conclusion

We conclude that all the cases are deliberate poisoning with the intention of suicide. Supervasmol poisoning is common in this locality than Op compound, because of its easy availability from the general stores, and it should be controlled with the establishment of strict policies in its trading.

Awareness programs regarding the adverse consequences of poisoning should be initiated by the government authorities to minimize the deliberate poisoning.

Organization of training and education programs for qualified health care professionals, including psychiatrists, is helpful in changing the mindset of the people.

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