

EVALUATION OF RECOVERY RATE IN POISON PATIENTS WITH OR WITHOUT STANDARD ANTIDOTE TREATMENT

ABSTRACT

Aim: To evaluate the recovery rate of poisoning with regards to the effectiveness of antidote administration.

Methodology: A prospective observational study was conducted in the inpatient department of General Medicine, Gandhi Hospital, Secunderabad from October 2021 to March 2022. The data was collected with the consent of the patient from the case sheets. The results were obtained by performing a statistical analysis of the data collected.

Results: Poison consumption was seen more in the male population. Young adults were more prone to poison consumption among all age groups. The main reason for poison consumption was found to be suicide. Accidental consumption was seen mostly in children. Among all the types of poisons, pesticide consumption was found to be the highest. Antidote was given in about 33% of the cases and not given in 15% of the cases. The rest did not have an antidote. The overall recovery rate was found to be 77%. The recovery rate was higher in female patients than the male patients. The highest recovery rate was seen in adolescents followed by middle-aged adults.

Conclusion: Our study concludes that the recovery rate was faster in cases where a standard antidote was available and administered. Performing decontamination techniques within a few hours of poison consumption was also effective.

Keywords: Poison, antidote, recovery rate, consumption.

INTRODUCTION

Poison consumption is one of the major causes of death in India. The reason can either be accidental or intentional. About 0.3 million people lose their lives due to various poisoning agents reported by the WHO^[1]. Poisoning was more commonly seen in males than females^[2]. Pesticide poisoning accounts for 1 in 7 deaths annually across the world. In India, about 38.8% of the poisoning cases are due to pesticide ingestion^[3]. The recovery rate of poisoning depends on various factors like age, type of poison, antidote availability, immediate decontamination, and many more. Middle and low-income countries witness a higher incidence of pesticide exposure due to the escalated usage of agrochemicals in agriculture^[4]. Due to the increased number of admissions of poisoning patients, we have conducted this study to analyze the recovery rate in the patients and the reason for poisoning.

MATERIALS AND METHODS

The study was conducted in the in-patient Department of General Medicine in Gandhi Hospital, Hyderabad. We conducted a prospective observational study from October 2021 to March 2022. We included all the In-patients admitted in the Department of General Medicine with a confirmational diagnosis of Poison consumption of any type and any age group between 1 to 80 years and of both genders. We excluded pregnant women and patients with HIV from the study.

COLLECTION AND ANALYSIS OF THE DATA

We Prepared a structured documentation form for clinical study purposes. We visited the General medicine wards on regular basis for case collection and reviewed the collected cases according to inclusion and

exclusion criteria on regular basis. The recovery rate based on the type of poisoning is measured in different age groups and both genders. A comparison of recovery when an antidote is given and not given was calculated. We interpreted the data and analyzed it to generate the final result. We used SPSS software version 29 for the data analysis.

RESULTS

The study included a total of 152 patient subjects. The majority of them were male population (58.6%). Among the subjects, young adults (43.43%) were most prone to poison consumption followed by middle-aged adults (31.6%). Pesticide poisoning excluding paraquat was the most common type of poisoning observed among all the other types followed by paraquat and phenol poisoning. The reason behind the poison consumption was suicidal in 80% of the patients and accidental in 20% of them.

Administration of an antidote was a major factor in the evaluation of the recovery rate. The overall recovery rate of the patients stands at 77% (n=117) and about 23% (n=35) of the subjects did not recover. In our study, the recovery rate was influenced by whether stabilization was conducted or not.

Figure1: Gender-wise distribution of poison consumption

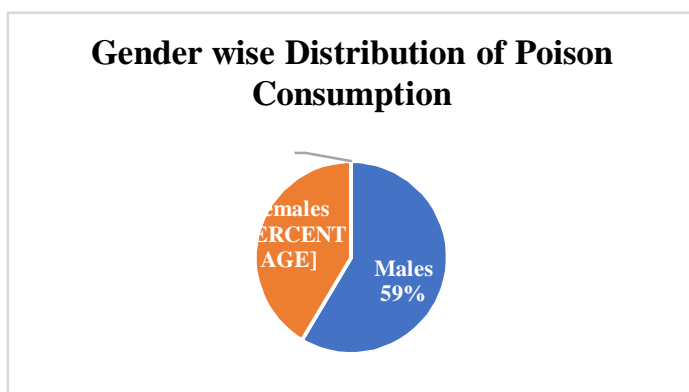


Table 1: Age-wise distribution of poison consumption

| Age group | Number of subjects | Percentage (%) |
|-------------------|--------------------|----------------|
| Children | 10 | 6.6 |
| Adolescent | 23 | 15.1 |
| Young Adult | 66 | 43.4 |
| Middle-aged adult | 48 | 31.6 |
| Old adult | 05 | 3.3 |
| Total | 152 | 100.0 |

Table 2: Distribution of poisoning type

| Type of poisoning | Number of subjects | Percentage (%) |
|---------------------|--------------------|----------------|
| Pesticide Poisoning | 33 | 21.7 |
| Drug Poisoning | 12 | 7.9 |
| Alcohol poisoning | 12 | 7.9 |
| Hair dye poisoning | 7 | 4.6 |
| Rat poisoning | 10 | 6.6 |

| | | |
|--------------------|-----|-------|
| Paraquat poisoning | 21 | 13.8 |
| Phenol poisoning | 18 | 11.8 |
| Acid ingestion | 12 | 7.9 |
| Poisonous creature | 20 | 13.2 |
| Others | 7 | 4.6 |
| Total | 152 | 100.0 |

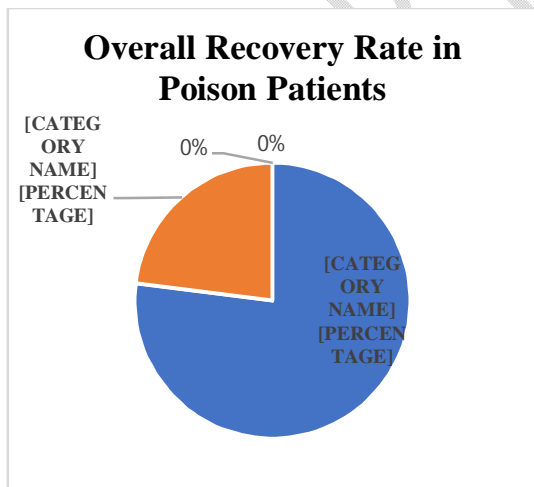
Table 3: Reason for consumption of poison

| Reason for poison consumption | Number of subjects | Percentage (%) |
|-------------------------------|--------------------|----------------|
| Suicidal | 122 | 80 |
| Accidental | 30 | 20 |
| Total | 152 | 100.0 |

Table 4: Distribution of antidote administration

| Antidote administration | Frequency | Percentage (%) |
|-------------------------|-----------|----------------|
| Given | 51 | 33.6 |
| Not given | 23 | 15.1 |
| No antidote | 78 | 51.3 |
| Total | 152 | 100.0 |

Figure2: Overall recovery rate in poison patients



DISCUSSION:

In our study, 89 patients were male and 63 patients were female. This shows that poison consumption was seen more in the male population compared to the female population. Poison consumption was highest in young adults and least in old adults. This may be due to the more social and family pressures on young adults making them vulnerable at a young age. This study is similar to the study of Britt Reuter Morthorst et

al., (2016)^[5]. Among various types of poisons, pesticide consumption was found to be the highest. This is due to the easy availability of pesticides in the market. This study is similar to the study of Toby Bonvoisin et al., (2020)^[6]. The main reason for poison consumption was found to be deliberate self-poisoning. This is mainly due to the lack of importance on mental health in society. Accidental poisoning was mostly seen in children. This study was similar to the study conducted by Young Choi et al., (2021)^[7]. From our study about 50% of poisons do not have a standard antidote. Among the remaining 50% of poisons which have an antidote, 15% of cases were not given an antidote due to the unavailability of an antidote or the physician's judgment. Our study shows an overall recovery rate of 77% and 23% of cases that have not been recovered. This may be due to various factors like age, gender, type of poison, antidote availability, and quantity of poison consumed. Our study is in contradiction to the study conducted by J. Jesslin et al., (2010)^[8] where the recovery rate in our study is higher in females than that of the male. The recovery rate was more in adolescents (91%) followed by middle age adults (77%). The lowest recovery rate was seen in older adults which is 60%.

The recovery rate varies for each poison. The lowest recovery rate was seen in paraquat poisoning and almost 100% recovery rate was seen in rat and hair dye poisoning. Out of the 20 cases collected in paraquat ingestion, only one patient has been recovered. This was due to the immediate treatment given to the patient within one hour of poison consumption and decontamination procedures were performed. This study was similar to the study conducted by Vale JA (1997)^[9]. Rat poisoning had 100% recovery rate but the ones who have been administered with vitamin K have recovered early than those who have not been administered with vitamin K. This study was similar to the study conducted by E. Martin Caravati et al., (2006)^[10]. Hair dye ingestion also had a 100% recovery rate but performing decontamination like gastric lavage and activated charcoal has shown a quick recovery. This study was similar to the study conducted by Jain et al., (2011)^[11]. Acid ingestion has shown a 75% recovery rate. The recovery rate was affected by performing decontamination techniques like extracting acid through suction and gastric lavage. This study was similar to the study conducted by Gary E Penner (1980)^[12]. The recovery rate for drug poisoning was found to be 91.7%. The recovery was less in cases in which there was multiple drug ingestion. The availability of an antidote for some single drug ingestion made it easier for recovery. This study was similar to the study conducted by J. Fisher et al., (2013)^[13]. Phenol ingestion had a recovery rate of 85%. Decontamination showed decreased absorption of phenol which increased the recovery rate. This study was similar to the study conducted by MD Lester et al., (1979)^[14]. Alcohol ingestion has become common in the recent pandemic times. Administration of the antidote showed a rapid recovery rate as decontamination techniques are not useful in this type of poisoning. This study was similar to the study conducted by Kenneth Mc Martin et al., (2016)^[15]. The recovery rate in pesticide poisoning is very high due to the availability of an antidote and decontamination techniques which are effective. The recovery rate of pesticide poisoning in our study was 90%. This study was similar to the study conducted by Michael Eddleston et al (2008)^[16]. Poisonous creature bites are the leading cause of accidental poisoning. As most of them have a standard antidote there was a higher recovery rate. In these cases, anxiety and fear also play a major role in the recovery of the patient. This study was similar to the study conducted by Capan Konca et al., (2014)^[17].

The recovery rate was maximum in cases in which had an antidote and the antidote were administered. In many cases, administration of an antidote also had a quick recovery rate. In cases of no antidote, symptomatic treatment along with decontamination played a major role in recovery.

CONCLUSION

Our study concluded that the recovery rate was based on many factors like gender, age, type of poison, availability of an antidote, etc., The recovery rate was rapid in cases where an antidote was given and the decontamination techniques were performed within a few hours of poison consumption. Young adults were more prone to poison consumption and the reason was mostly deliberate self-poisoning. Paraquat poison had the lowest recovery rate among all the various types of poisons. Administration of antidote has shown a quick recovery rate in many cases. Deliberate self-poisoning is a major threat to society due to the lack of awareness of mental health and its importance.

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