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Evaluation of the demographic, etiological & the costs of drug intoxication

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Abstract

Cases of intoxication are among the common medical emergencies. Cases of suicidal drug intoxication are more common among young people. Based on this information, our study aimed to identify the demographic and etiological characteristics of cases of drug intoxication and their costs to the social security institution. The files of patients diagnosed with drug intoxication in the adult emergency department of Kahramanmaraş Sutcu Imam University Medical Faculty Hospital between 01.01.2022 and 31.12.2022 were reviewed retrospectively from the automation system. In our study, the data of 110 patients admitted to the emergency department with a clinical picture of drug-related intoxication were evaluated. 75.5% of the patients were female and 40% of them were in the 18-24 age group. It was determined that 92.7% of the patients took the drug that caused intoxication for suicidal purposes and that psychiatric agents constituted a significant part of the drugs taken. Treatment costs increased significantly in cases of suicidal drug intake and multiple drug intake. The length of hospital stay and the cost of treatment increased as the time between the time of drug intake and the hospital arrival time increased. Most of the drug-related intoxications occurred due to suicidal intake. Most of the drugs used for this purpose were analgesics and psychiatric drugs. Emergency departments are the first places where patients with drug intoxication are evaluated, and all physicians working in the emergency department should know the approach to intoxication very well.

Keywords: Emergency department, drug intoxication, cost

Introduction

The substances that cause damage or death in biological systems by entering the body in various ways are called toxins (poisons), and the branch of science that studies toxins is called toxicology [1]. Cases of intoxication are among the common medical emergencies. Due to the wide range of substances that may cause intoxication, it is important to know the effects of the primary agent or agents that cause the event [2]. In cases of intoxication, the primary aim is to first plan the supportive treatment of the patient, to reduce the concentration of the toxin in the target organ or tissue, and then to combat it's pharmacological and toxicological effects [3]. Inhibiting the absorption of the toxic substance, accelerating the excretion of the toxic substance from the body, symptomatic support treatment, and eliminating the toxic effect with an antidote constitute the stages of intervention for intoxication [4,5]. Cases of suicidal drug intoxication are more common among young people. Intoxication is the most common cause of non-traumatic coma in patients aged below 35 years presenting to the emergency department.Emergency departments are the first places where patients with drug intoxication are evaluated, and all physicians working in the emergency department should know the approach to intoxication very well. Based on this information, our study aimed to identify

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the demographic and etiological characteristics of cases of drug intoxication and their costs to the social security institution.

Material and Methods

In this cross-sectional study, the demographic and etiological characteristics of cases of drug intoxication who presented to the emergency department and the cost to the Social Security Institution were analyzed. No population selection was made, and the study was concluded with a total of 110 participating patients who turned 18 and presented to the emergency department of Kahramanmaraş Sutcu Imam University Medical Faculty Hospital. The data of the study were collected between 01.01.2022 and 31.12.2022. Sociodemographic data of the participating patients (age, gender, type of exposure to poisining, single or multiple drug intake), cost analysis of drug intoxication, type of drug intoxication, and subgroups of drugs causing intoxication were evaluated.

The study was approved by the decision of Kahramanmaraş Sutcu Imam University Faculty of Medicine Clinical Research Ethics Committee session no: 2023/01, decision no: 04, dated 10.01.2023. The study is consistent with the principles of the Declaration of Helsinki.

The numerical data obtained were expressed as frequency, percentage, median, minimum and maximum values. Conformity to the normal distribution was evaluated using the Shapiro-Wilk test. Mann Whitney U and Kruskal Wallis analysis stays were used to compare the means. Post-hoc analyses were performed using the Mann–Whitney U-test to determine the significant variables among multiple groups. The data were evaluated using the SPSS version 15 program, and a value of $p<0.05$ was considered as an indicator of significant difference.

Results

71.8% (n=79) of the patients were in the age group under 35 years old. While the rate of female patients was 75.5% (n=83), it was determined that 92.7% (n=102) of the patients took drugs for suicidal purposes. The rate of taking a single drug and the rate of taking multiple drugs were 38.2% (n=42) and 31.8% (n=35), respectively (Table 1).

The group of drugs mostly taken by the patients was analgesics by 26.4% (n=29), followed by antipsychotics by 20.9% (n=23), antibiotics by 13.6% (n=15), antiepileptics by 8.2% (n=9), and antibiotics by 8.2% (n=9). Anti-flu, antihypertensive, and narcotic drugs were found to be the other groups of drugs, that were small in number (Table 2).

When the costs caused by drug intake were compared, the cost of the 25-34 age group was found to be higher compared to the 18-24 age group and the 35 years and above age group, and it was determined that the 35 years and above age group caused more costly consequences compared to the 18-24 age group. The cost of male patients was found to be higher compared to female patients. The cost was found to be significantly higher in multiple drug intake compared to single drug intake (Table 3).

Table 1. Demographic characteristics

Demographic characteristics	Number (n=110)	Percentage
Age (year)		
18-24	44	40.0
25-34	35	31.8
35 and above	31	28.2
Gender		
Male	27	24.5
Female	83	75.5
Type of exposure to poisining		
Accidentally	8	7.3
For suicidal purposes	102	92.7
Single or multiple drug intake		
Single	42	38.2
Multiple	35	31.8
No data	33	30.0

Table 2. Subgroups of drugs causing intoxication

Subgroups of drugs	Number	Percentage
1. Analgesic	29	26.4
2. Antidepressant	23	20.9
3. Antipsychotic	15	13.6
4. Antiepileptic	9	8.2
5. Antibiotic	9	8.2
6. Anti-flu	7	6.4
7. Antihypertensive	4	3.6
8. Narcotics	2	1.8
9. Antidiabetic	2	1.8
10. Antiarrhythmic	1	0.9
12. Other	22	20.0

*The sum of the rates exceeds 100% due to the presence of multiple drug use

Table 3. Cost analysis of drug intoxication

Demographic characteristics	Cost (median (min-max))	P
Age (year)		
18-24	172 (19.6-422)	
25-34	225 (19.6-738)	0.114
35 and above	209.8 (26.46-400)	
Gender		
Male	220 (19.6-738)	0.435
Female	200 (19.6-422)	
Type of exposure to poisining		
Accidentally	121.5 (50.10-400)	0.890
For suicidal purposes	200 (19.6-738)	
Single or multiple drug intake		
Single	173 (26.46-547)	0.064
Multiple	231 (19.6-422)	

a: was found by the Kruskal Wallis test
b: It was found by the Mann-Whitney U test
Note: In the post-hoc Mann-Whitney U analysis of the age groups, there was a significant difference in the pairwise comparison between the ages of 18-24 and 25-34 years p=0.044

Discussion

In the studies conducted in different regions of Turkey, it was reported that the cases of intoxication constituted 0.8-5% of emergency admissions [6]. In our study, the data of 110 patients admitted to the emergency department with a clinical picture of drug-related intoxication were evaluated. Considering the age and gender distribution, various evaluations in the literature

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were found. In the study of Mehtap et al., the mean age of the patients with drug intoxication was found to be 31 [7]. In our study, 71.8% of the patients were found to be under the age of 35. In the study of Mehtap et al., it was determined that suicidal drug intoxications constituted 84% of the cases of intoxication [7]. In our study, it was determined that 92.7% of our patients took drugs for suicidal purposes. The rate of taking a single drug and the rate of taking multiple drugs were found to be 38.2% and 31.8%, respectively. Such a high rate of suicidal ideation among young people suggests that the reasons for holding on to life have decreased and that our young people have given up their lives to the point of attempting suicide. It is believed that there is a relationship between suicide and many factors related to socio-economic and cultural structure such as depression, economic level, future anxiety, unemployment, and psychosocial stress.

In the study of Ödemis et al., it was found that 69.6% of the patients presenting with drug intoxication were female [8]. In the study of Özcan et al. [9], it was determined that 58.38% of the patients were predominantly female, however, So et al. [10] found this rate as 52.1%. In our study, similar to the literature, the rate of female patients was found to be higher by 75.5% compared to male patients. We consider that women tend to have more suicidal ideations due to emotional intensity (sadness, anxiety), economic anxiety, future anxiety, and social-cultural anxiety. Upon examining the distribution of drugs taken in drug intoxications, it was found that antidepressants and antipsychotics were generally at the forefront, while painkillers were at the forefront in some studies [11]. In study of Çakmak et al., Paracetamol (24.2%) was the most common cause of intoxications in the study patient group, anti-flu drugs (19.1%) were the second cause of intoxication, while NSAID (18.5%) drugs were in the third place (12). In our study, it was determined that the group of drugs mostly taken by the patients was analgesics by 26.4%, followed by antipsychotics by 20.9%, antibiotics by 13.6%, antiepileptics by 8.2%, antibiotics by 8.2% and anti-flu drugs by 6.4%. In our study, the rate of use of antipsychotic and analgesic drugs was high, and the levels of antiflu drug were lower. At the time of the COVID-19 pandemic, when the study was conducted, people used masks and flu vaccines were administered in greater numbers. Because of this, fewer flu patients were seen. We think that the reason for the different rates of drugs that cause poisoning is due to the difference in working times. It was determined that most of the drugs taken by the patients for suicidal purposes were analgesics and psychiatric drugs. Administering drugs to patients using psychiatric drugs in pieces under supervision by providing controlled administration of the daily dose of drugs may prevent patients from using these drugs for suicidal purposes.

In the study of Taner et al. [13], severe clinical conditions that threatened life and required intensive care treatment due to high doses and multiple drug intoxication were observed in suicidal drug intoxication. Therefore, hospital costs were found to be higher in suicidal drug intoxications compared to accidental drug intoxications. Upon examining the frequency of hospital admission of the cases of intoxication, the cost of drug intoxication to the country's economy was reported to be high. In our study, when the costs caused by drug intake were compared, the cost of the 25-34 age group was found to be higher compared to the 18-24 age group and the 35 years and above age group, and it was determined that the 35 years and above age group caused more costly consequences compared to the 18-24 age group. The cost of male patients was found to be higher compared to female patients. The cost was found to be significantly higher in multiple drug intake compared to single drug intake. We think that providing the patients with access to multiple drugs to use them in pieces per daily dose will reduce the cases of intoxication due to multiple drug intake and their costs.

In the study of Özcan et al. [10], 26.15% and 77.35% of the patients presented to health institutions in the first hour and in the first six hours, respectively. 7.21% of the patients presented to health institutions after 12 hours. In our study, the mean hospital arrival time of patients after drug intake was 60 minutes. It was found that the length of hospital stay and the cost of treatment increased as the time between the time of drug intake and the hospital arrival time increased. We think that the length of stay and costs of patients will decrease when cases of drug intoxication are taken to the hospital immediately.

Conclusion

Most of the drug-related intoxications occurred due to suicidal intake. Most of the drugs used for suicidal purposes are psychiatric drugs and painkillers. Emergency departments are the first places where patients with drug intoxication are evaluated, and all physicians working in the emergency department should know the approach to intoxication very well. The optimal condition of the treatment in intoxication is directly proportional to the knowledge of the poison ingested and the shortness between the time of exposure and the moment the patient is seen. The diversity of treatment includes supportive care, decontamination, antidote therapy and the use of elimination techniques. The management of the follow-up and treatment of the cases of intoxication, the creation of algorithms and the determination of strategies are important and the correct application of these algorithms will be life-saving.

Conflict of interests
The authors declare that there is no conflict of interest in the study.

Financial Disclosure
The authors declare that they have received no financial support for the study.

Ethical approval
The study was approved by the decision of Kahramanmaraş Sutcu Imam University Faculty of Medicine Clinical Research Ethics Committee session no: 2023/01, decision no: 04, dated 10.01.2023.

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