

Poisoning Cases In Trakya University Hospital, Turkey

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Citation

C Kavalci, G Kavalci, P Durukan. *Poisoning Cases In Trakya University Hospital, Turkey*. The Internet Journal of Toxicology. 2008 Volume 6 Number 2.

Abstract

Introduction: Poisonings are important causes of emergency department visits. It is especially very common in youth and women. In this study we aimed to define clinical and demographic features of poisoning cases admitted to our hospital. **Material and Methods:** Poisoning cases admitted to the emergency department of Trakya University Hospital between the dates of January 2008 and January 2009 were evaluated retrospectively. Demographic features of patients, poisoning agents, aim of intake of poisonous agent, admission times, treatment methods, department treatment and outcomes were recorded. Data were expressed as mean \pm standard deviation and percentage. **Results:** Between these dates, 2.2% of emergency department visits were poisonings. 460 patients were included in the study. Mean age of the patients was 25.6 ± 11.5 years. 40% of the patients were male (n=184) and 60% were female (n=276). Mean admission time to the hospital was 229.6 ± 150.6 minutes. It was detected that 62.4% of the patients were poisoned with a single agent and 95.1% took the agent orally. The most common poisoning agents were tablets (75.7%, n=348), carbon monoxide (CO) (5.4%, n=25) and alcohol (14.8%, n=68). 77.8% of the patients were discharged from the hospital, 21.3% were hospitalized, and 0.2% were sent to another hospital, and 0.7% were terminal. **Conclusion:** It was seen that poisoning cases were mostly seen in young females, occurring with single agent, and requiring good clinical care.

INTRODUCTION

Intoxication is the disruption of functions of a living organism by any agent¹. Toxic substances have been used for centuries for suicide and/or homicide purposes. Intoxications have been one of the important public health challenges dating back to ancient times. The annual incidence varies 0.02% to 9.3% in developing countries. A significant portion of emergency department admissions are constituted by intoxication cases and can lead to serious results depending upon the agent and the admission time to hospital^{2,3}. The prevalence is 0.4% according to data of the State Statistics Institute⁴. Intoxication cases exhibit regional differences in terms of demographic characteristics, intoxication fashion and agents to be exposed. Intoxication can occur not only due to the voluntary intake of agent but also accidentally or during a treatment. While intoxication can be accidental in children, it can occur as a result of suicidal intention. The aim of this study is to identify the clinical and demographic characteristics of intoxication cases admitted to the Trakya University Hospital emergency department.

MATERIAL AND METHODS

Patients admitted to Trakya University Hospital between the

dates of January 2008 and January 2009 were evaluated retrospectively. Characteristics such as age and gender of the patients, weather conditions and the time the intoxication occurred, admission time and mode of transport, intoxication agents, routes, of contact with the substance, interventions done at the emergency department, and the results (discharge, forwarding, hospitalization, death etc) were recorded to the prepared form. Data were assessed with the SPSS 15.0 software package and expressed. Chi-squared (χ^2), Mann-Whitney U and Student t-test were used in statistical analysis and $p < 0.05$ was accepted significant.

RESULTS

During the study period, a total of 20,715 patients were admitted to emergency service and, 2.2% of them were admitted due to intoxication. While 39.6% (n=182) of the intoxication patients came directly to the emergency department, the other 60.4% of them (n=278) were forwarded to the emergency department. 40% of the patients (n=184) were male, 60% (n=276) of them were female, giving a female/male ratio of 1.5. Mean admission time to the hospital after intoxication was 231.8 ± 169.1 minutes. 229.6 ± 150.6 minutes in males and 233.4 ± 180.6 in females respectively. Statistically no significant difference was found

between the admission times in terms of gender ($X^2=21.9$, $p>0.05$). Mean age of the patients was 25.6 ± 11.5 years (Male: 34.3 ± 14.9 years, Female: 27.9 ± 12.8 years) with no statistically significant difference was found between the two ($X^2=21.9$, $p>0.05$). The distribution of patients in terms of age groups and gender is shown in table 1. A statistically significant difference was found between age groups in terms of gender ($X^2=22.7$ $p<0.001^*$).

Figure 1

Table-1: Age group distribution in terms of gender

Age group	Male (n)	Female (n)	Total (n)	Percentage (%)
16-25*	61	152	213	46.3
26-35	55	58	113	24.6
36-45*	27	42	69	15
46-55	16	10	26	5.6
56-65*	18	9	27	5.9
>65	7	5	12	2.6
Total	184	276	460	100

* $p<0.001$

When intoxication events were examined in terms of seasons, it was seen that 30.7% of the patients were admitted in spring, 31.1% of them were admitted in summer, 22% of them were admitted in autumn and 16.3 % of them were admitted in winter. A statistically significant difference was found between the seasons and the intoxication events ($t=45.3$, $p<0.001^*$).

Figure 2

Table 2: Toxic substance intake in terms of gender

Gender	Suicide (n)	Accidental (n)	During the treatment (n)	Pleasure(n)
Male	104	36	6	38
Female	244	17	10	5
Total	348	53	16	43

A statistically significant difference was found between toxic substance intakes in terms of gender ($X^2=74.02$, $p<0.001$). It was seen that while intoxications in female were usually for suicidal purposes, they were for pleasure or accidental in males. The most frequent intoxication causes are drugs (75.7%, $n=348$), alcohol (14.8%, $n=68$) and carbon monoxide (CO) (5.4%, $n=25$). Other intoxication causes are summarized in table 3.

Figure 3

Table-3: Intoxication causes in terms of gender

Agent	Male (n)	Female (n)	P value
Drug	99	249	$X^2=79.47$, $p<0.001^*$
CO	14	11	$X^2=2.82$, $p>0.05$
Alcohol	53	15	$X^2=47.86$, $p<0.001^*$
Mushroom	7	2	$X^2=5.45$, $p>0.05$
Corrosive substance	11	8	$X^2=2.64$, $p>0.05$
Narcotic	8	2	$X^2=6.81$, $p<0.01^*$
Organophosphate	15	7	$X^2=7.64$, $p<0.01^*$

* $p<0.001$

There was a statistically significant difference between either gender in drug, narcotic, organophosphate and alcohol intoxication ($p<0.05$), however, there was no significant difference in intoxications with other agents in terms of gender ($p>0.05$).

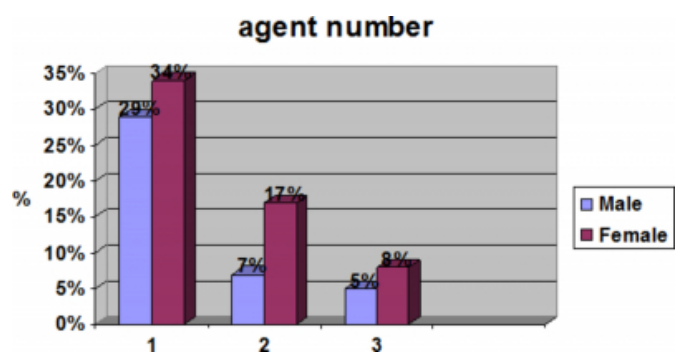
The most frequent drugs leading to intoxication were antidepressants (33.2%). The distribution of drugs causing intoxication in terms of gender is summarized in table-4. There was a statistically significant difference between genders in antidepressant and analgesic drugs.

Table-4: Drugs causing most frequently to intoxication in terms of gender

62.2 % of the patients ($n=286$) were intoxicated by a single agent, 24.3% of them were intoxicated by two agents ($n=112$), 13.3% of them ($n=62$) were intoxicated by three or more agents (Graphic-1). 95.7% of the patients ($n=440$) took the agent by oral route, 4.1% of them ($n=19$) took the agent by inhalation, 0.2% of them ($n=1$) took the agent by dermal route (Graphic-2).

Figure 4

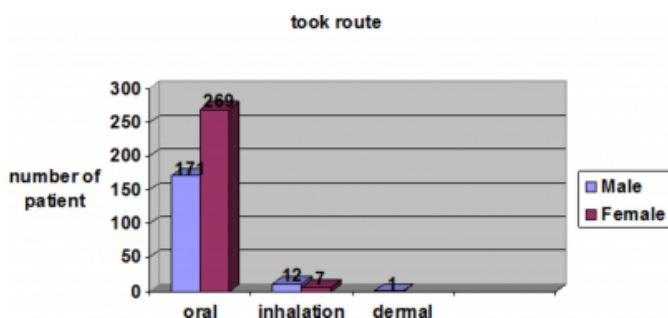
Graphic-1: Agent number



1-Single agent, 2-Two agent, 3-Three or more agent

Figure 5

Graphic-2: Took route



The vital signs of the patients were as follows: mean systolic blood pressure was 117.3 ± 18.7 mmHg, diastolic blood pressure was 74.7 ± 10.7 mmHg, and pulses were 88.1 ± 15.2 beats/ minute. While gastric lavage was performed on 10.4% of the patients (n=48), 44.8% of them (n=206) were treated with active charcoal and an antidote was given to 6.5% of them (n=30). 77.8% of the patients were discharged from the hospital where as 0.2% of them were forwarded, 21.3% of them were hospitalized and 0.7% of them were terminal.

DISCUSSION

Intoxications are important health problems leading to mortality and morbidity when they are not treated in time. Suicide is the second most common cause of death among the adolescent and young adults⁵. In the studies done, very different data were obtained about the rate of intoxication. Different rates changing from 0.7-5%²⁴⁶⁷⁸⁹. Our result is also consistent with the literature (2.2%).

In the literature, it has been reported that intoxication cases are seen more commonly in the younger age group and in females⁴⁶¹⁰¹¹. In our study F/M ratio is 1.5 and the rate is 46.3% in the 16 to 25 age group which found consistent with literature. We suggest that economic and social problems such as unemployment, marriage etc are affecting this age group more commonly, and so increase the rate.

In the reported studies, it was detected that the majority of the patients admitted to hospital in two hours¹². In our study, this time was found as four hours. We think that this one-hour extension is caused by the insufficient headways of the mass transportation means providing the arrival to our hospital.

In literature, it has been reported that intoxication cases are more seen in the spring and winter¹³. In our study we drawn the conclusion about that intoxication events were more frequent in spring and summer. We think that it may be due

to climate and geographic differences.

It was reported that the intoxications due to suicidal purposes were more common than the accidental intoxications²⁴⁶¹²¹⁴¹⁵. Our results are consistent with the literature. Drugs were reported as the most frequent intoxication agents²⁴⁷⁹¹²¹³, as it is in our study. We think that banned drug sales without prescription may reduce the intoxication cases. We found in our study that CO and alcohol as the agents of intoxication. We suggest that CO intoxications will diminish by the use of LPG. In the drug of choice for intoxication cases, it was reported the analgesic drugs⁴⁶⁸ are the most common agents, some other authors reported that psychoactive drugs²¹⁴¹⁶ are the most common agents. We also found antidepressant drugs as the most frequent agents. We suggest that restriction in the prescription of the antidepressant drugs is effective in this conclusion.

The ratio of intoxication by a single agent was reported as 62% by Pekdemir¹⁴. 65% of our patients were intoxicated by a single agent. Gastrointestinal route was reported as the most frequent exposure route²⁶¹⁴. Our results are also consistent with the literature.

Activated charcoal has an important role in the treatment of the intoxications. Pekdemir¹³ reported that he gave active charcoal to 64.4% of the patients. Similarly, we gave active charcoal 44.8% of the patients.

It was seen that most of the patients were discharged from the emergency department after 8-hour observation period. Our results showed parallelism with these results. Most of the patients were discharged from the emergency department after this observation period. Various hospitalization rates were reported in the literature. Pekdemir¹⁴ reported that 25.3% of the patients were hospitalization. Our results are consistent with the literature.

The mortality rates were reported as 0-5.8% in the literature⁴¹⁴¹⁷. In accordance with the literature we had a mortality rate of 0.7%. The early interventions in the intoxication cases decrease the mortality.

CONCLUSION

Intoxications are still important health problems. We saw with this study that intoxications are seen mostly in summer months, in 16-25 age group, in women, oral route, and with single agent. Immediate and proper treatment of these cases will decrease the mortality.

References

1. Wax PM. History. In: Goldfrank LR, Flomenbaum NE. Toxicologic Emergency 6th ed. New York, McGraw-Hill; 1998. p.1-14.
2. Seydaoglu G, Satar S, Alparslan N. Frequency and Mortality Risk Factors of Acute Adult Poisoning in Adana, Turkey, 1997-2002. *Mt Sinai J of Med.* 2005; 72: 393-401.
3. Hanssens Y, Deleu D, Taqi A. Etiologic and demographic characteristics of poisoning: a prospective hospital-based study in Oman. *J Toxicol Clin Toxicol* 2001; 39: 371-380.
4. Ozkose Z, Ayoglu F. Etiological and demographical characteristics of acute adult poisoning in Ankara, Turkey. *Hum Exp Toxicol* 1999; 18: 614-618.
5. Hack JB, Hoffman RJ. General Management of Poisoned Patients. In Tintinalli JE, Kelen GD, Stapczynski JS, editors. *Emergency Medicine: A Comprehensive Study Guide* 5th ed. New York, NY: McGraw Hill; 2000. p. 1057- 1063.
6. Goksu S, Yildirim C, Kocoglu H, Tutak A, Oner U. Characteristics of acute adult poisoning in Gaziantep. *J Toxicol Clin Toxicol* 2002; 40: 833-7.
7. Karakaya A, Vural N. Acute poisoning admissions in one of the hospitals in Ankara. *Human Toxicology* 1985; 4: 323-326.
8. Pinar A, Fowler J, Bond GR. Acute poisoning in İzmir, Turkey-A pilot epidemiologic study. *J Toxicol Clin Toxicol* 1993; 31: 593-601.
9. Tufekci IB, Curgunlu A, Sirin F. Characteristics of acute adult poisoning cases admitted to a university hospital in Istanbul. *Hum Exp Toxicol* 2004; 23: 347-351.
10. Hall AK. Changing epidemiology and management of deliberate self poisoning in Christchurch. *NZ Med J* 1994; 107: 396-399.
11. Akbaba M, Nazlican E, Demirhindi H, Sütölk Z, Gökel Y. Etiological and demographical characteristics of acute adult poisoning in Adana, Turkey. *Hum Exp Toxicol.* 2007;26:401-6.
12. Lapetto-Reinilvoto O, Kivisto KT, Pohjola-Sintonen S, Luomanmaki K, Neuyonen PJ. A prospective study of acute poisoning in Finnish hospital patients. *Hum Exp Toxicol* 1998; 17: 307-11.
13. Kavalci C, Cevik Y, Ozer M, Durukan P, Kavalci C. Characteristics Of Poisoning Cases In Ankara, Turkey. *Int J Emerg Med.* 2009;5:Number 1
14. Pekdemir M, Kavalci C, Durukan P, Yıldız M. Acil Servisimize Başvuran Zehirlenme Olgularının Değerlendirilmesi. *Acil Tıp Dergisi* 2002; 2: 36-40.
15. Güloğlu C, Kara İH. Acute poisoning cases admitted to a university hospital emergency department in Diyarbakır, Turkey. *Hum Exp Toxicol* 2005; 24: 49-54.
16. Mert E, Bilgin NG. Demographical, aetiological and clinical characteristics of poisoning in Mersin, Turkey. *Hum Exp Toxicol* 2006; 25: 217-223.
17. Cengiz M, Baysal Z, Ganıdaglı S, Altındag A. Characteristics of poisoning cases in adult intensive care unit in Şanlıurfa, Turkey. *Saudi Med J* 2006; 27: 497-502.

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