

Epidemiological analysis of poisoning cases in Van, Turkey

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Abstract

Objective: To investigate the etiological and demographical characteristics of acute adult poisoning cases in eastern Turkey.

Methods: The retrospective study was conducted at the Emergency Department of Yuzuncu Yil University, School of Medicine, and comprised data related to the period between 2007 and 2009. The data obtained included age, gender, referrals, manner of poisoning, manner of application, the department which followed up on the patients, duration of hospital stay. All data was noted on proforma. SPSS 15 was used for statistical analysis.

Results: Of the total cases visiting the Emergency Department, 1207 (1.1%) related to poisoning. Of them, 880 (72.9%) had attempted suicide; 858 (71.1%) were female; 349 (29%) were male. The average age of the females was 25.4±8.5 years, and that of the males 28.3±14.3 years. Single-medicine was noted in poisoning 544 (45.1%) patients. Other poisoning types were multidrugs 373 (30.9%); rat poisoning, insecticide and pesticides, 145 (12%); corrosives 38 (3.1%); and weed, mushrooming; food 47 (3.8%). Oral poisoning was noted in 1141 (94.5%) cases. A total of 1019 (84.4%) patients received treatment and were followed up in the Emergency Department. Six (0.6%) patients died.

Conclusion: There is a need to generate more awareness about the hazards of domestic cleaning products and to keep it away at some distinct place to minimised chances of confusion.

Keywords: Adult poisoning, Emergency Department, Turkey. (JPMA 64: 560; 2014)

Introduction

Poison leads to harmful effects due to its deadly chemical activity. One of the most frequent referrals to the Emergency Department (ED) of hospitals relates to poisoning. It is an alarmingly serious public health problem and one of the leading causes of mortality among adolescents.¹

Cases of poisoning vary in terms of method of poison administration, frequency, gender, socio-cultural status and the type of poison. Though poisoning can occur across all age groups, it is a leading cause of mortality particularly among adolescents in different countries.¹ In Turkey, various studies have been conducted on patients with a diagnosis of poisoning and referral to EDs. The current study was planned to add to the literature about poisoning in eastern Turkey.

Patients and Methods

The retrospective study was conducted at Yuzuncu Yil University, Van in Eastern Turkey, and comprised patients presenting at the ED from January 1, 2007 to December 31, 2009, due to poisoning. After approval of the institutinal ethics committee, data regarding age, gender,

unit of referral, cause of poisoning, type of referral, follow-up action, duration of hospitalisation, and the method of administration of the substance was recorded on a proforma. Cases involving pregnant patients were divided into three groups based on the trimester of gestation.

The data obtained was analysed using SPSS version 15.0. Results were expressed as mean ± standard deviation, median and as frequencies and percentages. Mann Whitney U test was used for comparison in terms of gender. The value of $p < 0.05$ was accepted as statistically significant.

Results

During the study period, a total of 106,935 patients attended or were referred to the ED. Of these, 1,207 (1.1%) were diagnosed as poisoning. Among them, there were 858 (71.1%) females and 349 (28.9%) males. The female/male proportion was found to be 2.5/1. The overall age range was 16-86 years. The mean age of female cases was 25.4±8.5 years, and that of the male cases was 28.29±14.35 years. The differences between the mean ages of females and males was not statistically significant ($p > 0.05$). The ages of 837 (97.5%) of the female cases ranged from 16 to 49 years, and 67 (8.0%) of these females were in gestational periods, with 38 (56.7%) being in their first trimesters.

The most frequent referrals to the hospital - 380 (31.50%) - took place in summer.

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Table-1. Distribution of cases according to gender, and poisoning agents.

Subject and type of poisoning	Female n (%)	Male n (%)	Total n (%)
Single drug	415 (34.4)	129 (10.7)	544 (45.1)
Multidrug	282 (23.4)	91 (7.5)	373 (30.9)
Rat poison	75 (6.2)	28 (2.3)	103 (8.5)
Corrosive substance	22 (1.8)	16 (1.3)	38 (3.1)
Opioid	3 (0.2)	33 (2.7)	36 (2.9)
Pesticides	25 (2.1)	17 (1.4)	42 (3.5)
Methyl-ethyl alcohol	--	15 (1.2)	15 (1.2)
Weedicides	11 (0.9)	6 (0.5)	17 (1.4)
Food and mushroom	21 (1.7)	9 (0.7)	30 (2.4)
Carbon monoxide	5 (0.4)	4 (0.3)	9 (0.7)
Total	859 (71.1)	348 (28.9)	1207 (100)

Table-2: Distribution according to methods of poisoning.

Method	n	%
Oral	1141	94.5
*Parenteral	33	2.7
Inhalation	31	2.6
Skin	2	0.2
Total	1207	100

*Intramuscular and intravenous.

In terms of the type of referral, 434 (35.9%) cases had been directly referred to the ED, and 773 (64.1%) were indirect referrals from a health institution. Of all the cases, 880 (72.9%) stated that they had attempted suicide while 327 (27.1%) had been exposed to poison by accident (Table-1). The distribution according to the method of administering the poison was also noted (Table-2).

Overall, 1,019 (84.4%) patients had attended the ED, while 188 (14.6%) had attended other clinics for follow-up.

Standard poisoning treatment protocol was applied to all of the cases, including nasogastric tube, then gastric irrigation, 1mg/kg active charcoal, intravenous fluid therapy. Acetylcysteine treatment was given orally to 46 (3.8%) patients with paracetamol toxicity and had high levels after four hours. Two (0.1%) patients diagnosed with metformin poisoning were promptly given dialysis. A temporary pace-maker was applied to 3 (0.2%) patients due to calcium channel blocker poisoning. Besides, 19 (1.6%) cases had attempted suicide for the second time and 6 (0.5%) lost their lives.

Discussion

Poisonings are among the leading causes of referral to a hospital ED.¹ In epidemiological studies conducted in

Turkey, proportion of poisoning cases has been determined as 0.8-5%.^{2,3} In our study, the proportion was found 1.1% which was in agreement with the literature. In a study conducted in Iran,¹ the female/male proportion was reported to be 1.2/1. Another study in Palestine⁴ reported this proportion to be 1.5/1. In our study, female/male proportion was 2.5/1, which showed coherence with earlier studies conducted in Turkey.^{2,3}

In a study conducted in Turkey, the mean age of males was 18.01±17.8 and the mean age of females was 20.3±16.8.⁵ In our study, 55.3% cases were within the 16-24 age group, with the mean age of the females being 25.4±8.5 and for the males it was 28.3±14.3.

One study⁶ reported that poisoning cases peaked in the summer months, achieving a level of 35.4%. There was an increase in the number of poisoning cases in our study as well, especially in May, June, July and August. A possible reason for this increase may be the mood swings in summer months and the results of poor grades obtained in schools at the end of spring.

Another study⁵ reported that 76.7% poisoning cases were accidental, while 23.3% of them were attempted suicides. In another study, 90.2% of poisoning cases were attempted suicide.¹ In our study, the rate was 72.9%.

Most of the poisonings in a study were caused by multiple drugs,⁵ while in another,⁷ they were caused by drugs, supplements and alcohol. In our study, substances causing poisonings were found to be drugs (76%), vermin, pests or mice poison (8.5%), corrosive materials (3.1%), and heroin and -marijuana (2.9%). Poisonings related with corrosive substances and drugs meant for killing pests or vermin are also frequently observed in the region covered by this study. We are of the conviction that the higher prevalence of this type of poisoning may be due to the easy availability of these substances in markets in rural areas. Corrosive substances, such as laundry liquids or cleaning substances, are also sometimes kept in other containers and can be mistaken for consumable liquids, leading to poison exposure.

Some studies have reported that poisonings per oral are frequently observed.^{5,6} The results of our study are in agreement with literature as in 94.5% cases, poisoning had taken place from oral ingestion.

In terms of follow-up, studies have reported 69.9%⁷ and 36.6%⁵ rates for ED. In the current study, the treatment and follow-up of 84.4% cases were managed in the ED.

Mortality rate due to poisoning has been reported to be

2%⁸ and 2.53%.¹ In our study, this rate was found to be low at 0.5%.

Conclusion

The frequency of referrals shows that gender and season may be risk factors associated with poisonings. There should be more efforts to generate awareness of dangerous substances, and to draw attention to the fact that domestic insecticides, pesticides and detergents represent a health hazard when ingested or absorbed through the skin.

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