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Etiological and demographical characteristics of acute adult poisoning in Ankara, Turkey

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1 The aim of this retrospective study was to evaluate etiological and demographical characteristics of acute adult poisoning patients during 1 year at a university hospital in Ankara, Turkey.

2 Two-hundred and twenty-eight adults (of which 180 were suicidal poisoning cases) were admitted to the emergency center with acute poisonings. This was 0.7% of all emergency admissions. The female-to-male ratio was 3 : 1, and the majority of patients (63.6%) were below the age of 25 years.

3 Drugs were the major cause in 75.9% of the cases, followed by inhalation of gases (17.6%), food (2.6%), corrosives (2.2%), pesticides (0.9%), and alcohol (0.9%). Analgesics were the most common cause of drug poisoning (29.7% of all substances). There were no fatalities.

4 It is important to realize that this study is a hospital-based study, and hence it may be considered difficult to draw conclusions for the whole population of Turkey. However, we consider that the reason for such a high ratio of analgesic poisoning is probably due to the habit of extensive analgesic prescribing in Ankara, which is the capital of Turkey.

Keywords: poisoning; adult; analgesic; Turkey

Introduction

Both suicidal and accidental poisoning becomes a more and more important problem for medical emergency centers in Turkey[1,2] as much as in developed countries.[3–5] According to reports of Ministry of Health of the Turkish Republic, 27 144 poisonings admitted to the hospitals throughout the country,[6] and State Institute of Statistics in Turkey estimated that the population of Turkey was 63 250 000 in 1995.[7] Hence, prevalence of poisoning in Turkey could be estimated as 0.04% in 1995. However, no satisfactory data on etiological and demographic characteristics of these patients were provided by reports of the Ministry of Health. We consider that the etiological and demographic characteristics of the patients and toxicological trends are of major importance, not only for treatment policy of these patients in emergency centers, but also for providing satisfactory public assistance on this matter.

For this purpose, in this study, data of adult poisoning was retrospectively analyzed in order to define etiological and demographic characteristics of poisoning cases for Turkish population based on the acute poisoning admissions to the Emergency Center, Gazi University Hospital.

Methods

In this study, data is given of 228 poisoning patients admitted to the emergency center of the university hospital from January 1, 1997 to January 1, 1998. The data analyzed included demographic (age, sex, marital status and job) and medical (type of poison(s) and the amounts involved, date of poisonings, the clinical status on arrival, length of the hospital stay and outcome) records.

Toxic agents were classified as one of six categories: drugs, gases, food, corrosives, pesticides, or alcohol. The drugs were categorized into eight subgroups: psychoactive drugs, analgesics, antibiotics, cardiovascular drugs, antihistamines, multiple drugs, others (hormones, vitamins, antidiabetics, anticholinergics and antiemetics), or unknown.

The results were also analyzed for four age groups: 16–25 years, 25–34 years, 35–44 years or over (>45). Because the pediatric emergency department is a separate unit in this hospital and only referred cases are accepted, pediatric cases were not included.

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Results

Poisoning incidence

During the 12-month study period from 1 January 1997 to 1 January 1998, 228 poisoning patients constituted 0.7% of 32 571 admissions to the emergency center. Distribution of poisoning according to months showed that the greatest number of patients were admitted in March (12.7%) and July (11.8%). An apparent decrease in the number of the patients was observed in January (2.2%). Poisoning due to carbon monoxide and other gases were found to be most frequent in February (38%) and March (36%).

Demographic characteristics of patients

The ages of the patients ranged from 16 to 65 years. Of these 228 patients, 171 (75%) were female and 57 (25%) were male. In total, the female-to-male ratio was 3 : 1. It was found that 145 patients (63.6%) were younger than 25 years of age. The mean ($\pm$s.e.m.) age of the female patients were 24.67 ± 0.70 years and males were 27.32 ± 1.42 years (Figure 1).

It was observed that 83 patients (36.4%) were married, while 141 patients (61.8%) were single. The divorced patients were only four (1.8%).

Majorities of the poisoning were high school or university student's 106 cases (46.5%). The remaining were as follows: 64 (28.1%) housewife, 35 (15.4%) office worker, ten (4.4%) worker, ten (4.4%) merchant, two (0.9%) retired, or one (0.4%) soldier (Table 1).

Causes and types of poisoning

Drugs were the most frequent cause of poisoning and accounted for 173 cases (75.8%). Gases inhalation including CO was the second most frequent cause of poisoning (17.6%, 40 cases), followed by food (2.6%, six cases), corrosives (2.2%, five cases), pesticides (0.9%, two cases), and alcohol (0.9%, two cases) (Figure 2).

A single agent in 74% of all drug poisoning, while two and more agents were noted in 26% of the cases. Analgesics were the most common cause of all drug poisoning (30.1%, 52 cases), followed by psychoactive drugs (20.8%, 36 cases), antibiotics (6.4%, 11 cases), other drugs (5.8%, ten cases), cardiovascular drugs (4.1%, seven cases) and antihistamines (3.4%, six cases). Multiple drugs were implicated in 26% (45 cases). In the remaining six cases of drug poisoning (3.4%), the substance involved was not identified. Analgesics were the most frequently involved agent in the multiple drug-group (28 of 45 cases), as seen in Table 2.

Suicidal poisoning was the majority of patients (78.9%, 180 cases). The remaining (21.1%, 48 cases) was accidental. It was clearly observed that female patients constituted the majority of suicidal poisoning (72.2%, 130 cases). Moreover, a high percentage of suicidal patients (76.7%, 138 cases) were less than 25 years of age.

Hospitalization, treatment and outcome

The percentage hospitalized and the duration of hospitalization by agent are seen in Table 2. The

Table 1 Demographic characteristics of poisoning patients by sex

	Female (n)	*Male* (n)
Number of cases	171	57
Age ($\times \pm$s.e.m.)	24.67 ± 0.70	27.32 ± 1.42
Marital status		
Married	50	33
Single	117	24
Divorced	4	–
Job		
Students	86	20
Housewife	64	–
Officer	17	18
Worker	4	6
Merchant	–	10
Retired	–	2
Soldier	–	1

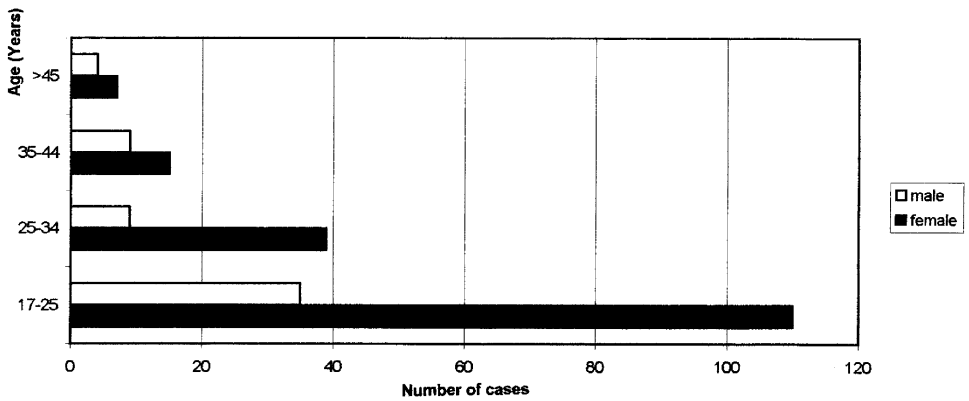

Figure 1 Distribution of poisoning patients age by sex

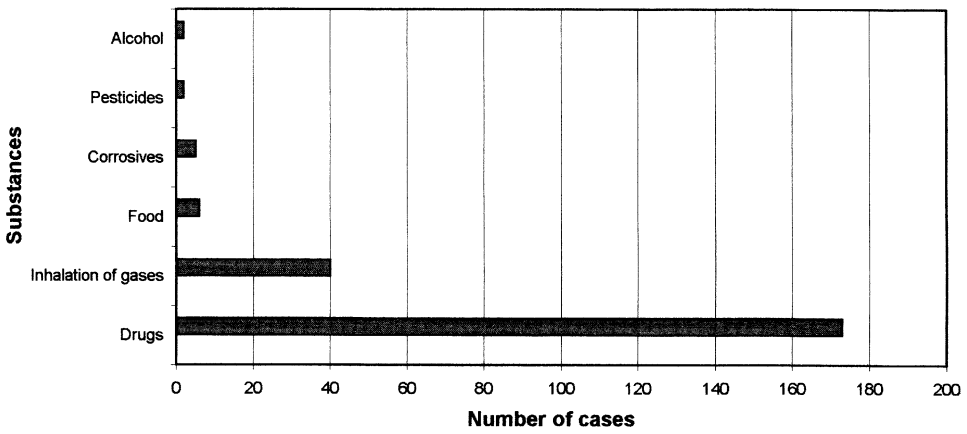

Figure 2 Causes and types of poisoning

Table 2 The frequency of specific agents used in each drug group

Class of drug	*Frequency* (n)	%
Analgesics	52	30.1
NSAIDs	28	
Paracetamol	16	
Aspirin	8	
Multiple drug	45	26
Analgesic+antidepressant	12	
Analgesic+antibiotic	10	
Analgesic+antispazmodic	6	
Other mixtures	17	
Psychoactive drugs	36	20.8
Antidepressants	14	
Psychosomatic regulators	12	
Benzodiazepines	5	
Antipsychotics	5	
Antibiotics	11	6.3
Other drugs	10	5.8
Oral antidiabetics	3	
Antiemetics	2	
Oral contraceptives	2	
Potassium permanganate	1	
Antiparasitic	1	
Vitamin	1	
Cardiovascular drugs	7	4
Cardiac glycosides	4	
Beta blockers	2	
Diuretics	1	
Antihistamines	6	3.5
Unknown drugs	6	3.5
Total	173	100

follow-up period of the patients were as follows: 36.8% (84 cases) for 1–12 h, 18% (41 cases) for 13–24 h, 2.2% (five cases) for more than 24 h. The mean duration of hospitalization was 0.7 day. The remaining 88 patients were not hospitalized following first medical aids. Because, 34.2% (78 cases) did not have any serious clinical signs, while 4.4% (ten cases) did not accept hospitalization and discharged themselves.

Because of severe poisoning, 0.9% (two cases) were transferred to the intensive care unit for further treatment. After toxicological treatment 3.5% (eight cases) were transferred to the other hospitals due to their social security problems.

The clinical status of the patients on arrival was generally good. One-hundred and ninety-three patients (84.7%) were fully awake, 10.5% (24 cases) were drowsy and 4.8% (11 cases) were unconscious. The majority of unconscious patients involved psychoactive drugs (27.2%, three cases) (Table 3).

It was noticed that 69.3% (158 cases) received at least one 50 g dose of activated charcoal. Gastric lavage was performed in 57% (130 cases) and 44.8% (102 cases) involved both gastric lavage and administration of charcoal. Twelve patients (5.3%) received specific antidotes (such as flumazenil, naloxone). None of the patients received haemoperfusion or haemodialyses. There was no death in any of the 228 poisoning patients admitted to the emergency center.

Discussion

During a 1 year period, 228 poisonings accounted for 0.7% of total admissions to the emergency department. In another noteworthy Turkish epidemiological study conducted in Izmir, the percentage of poisoning among the total number of emergency admissions was 0.8%.[1] However, Karakaya *et al*[2] found that 5% of the emergency admissions were cases of poisoning in another hospital in Ankara. It is difficult to estimate the total number of poisonings in Ankara because there was no centralized data collection. Furthermore, poisoning patients are often treated by traditional antidotal home remedies such as yogurt, garlic or milk instead of seeking appropriate hospital care. Similarly, Meredith[8] also pointed out the fact that it was remarkably difficult to obtain meaningful poisoning statistics even in countries with comparatively advanced systems for collection of population health data. Only coordi-

Table 3 Frequency, severity and outcome by substance

Substances	*Unconscious*	*Number of patients*	*Number hospitalized*	*Total hospital days*	*Hospital days per patients*
Analgesics	0	52	27	14	0.5
Psychoactive drugs	3	36	22	16	0.7
Antibiotics	0	11	4	1	0.2
CV drugs	1	7	7	7	1
Antihistamines	0	6	4	2	0.5
Multiple drugs	1	45	28	20	0.7
Unknown drugs	0	6	5	3	0.6
Other drugs	2	10	8	6	0.7
Inhalation of gases	2	40	22	14	0.6
Food	0	6	1	1	1
Corrosive	0	5	4	2	0.5
Alcohol	1	2	2	2	1
Pesticides	1	2	2	2	1
Total	11	228	136	90	9

nated prospective studies will reveal the true incidence of poisoning in Ankara.

In this study we observed that suicidal poisonings were more common than accidental poisonings. Young females constituted the majority of both accidental and suicidal poisonings. This data was in accordance with reports of both data of World Health Organization[9] and data of State Institute of Statistics in Turkey. Previous studies also reported that females were admitted more frequently because of suicidal poisoning.[1,2,10–17] Deliberate self-poisoning remains a problem mainly of the young with a gender ratio favoring female. In the WHO/EURO multicentric study, parasuicide was more common in females in 15 out of 16 European participating centers, and in the majority of centers, the highest person-based rates were found in the younger age groups.[11]

The typical causes of poisoning vary greatly from one country to another. In Western Europe and North America, drugs have always been the most common agents taken by adults.[8] Outside Europe, and developing countries in particular, the causes are often very different.

Drugs caused the great majority of all acute poisoning, particularly by analgesics. In previous reports from Turkey, analgesics were also found to be the most frequent ingested agents.[1,2] Hawton *et al*[12] stated that there was an increasing trend in suicides with paracetamol. Similarly, paracetamol was declared as the most common poisoning agent in the North East of England.[5]

The ingest of paracetamol was found to be less frequent in this study than in previous studies;[5,12] instead, the most common analgesics were non-steroidal anti-inflammatory drugs (NSAIDs) in this study. Analgesics, especially NSAIDs, were also reported as more common poisoning agents in a university hospital in Finland.[18]

We consider that the reason for such a high ratio of analgesic poisoning is probably due to the extensive prescribing of analgesics in Turkey. Furthermore, most of the analgesics and antispasmodics used are sold freely without medical supervision, and hence they can easily be found in high quantity in most of the household medicine cabinets. A report of the pharmaceuticals manufacturers' association declares that analgesics and antispasmodics were the most common consumption drugs in 1996.[19] Thus, it could be said that there is a strong correlation between trends in analgesic sales and in analgesic poisoning in Turkey.

Although psychoactive drugs were reported as the most ingested agent in cases with suicidal poisoning in other countries,[4,10,13,15,20] these drugs were found to be the third substance following analgesics and multiple drug-ingestion according to the data of this study.

Poisoning due to gases, particularly carbon monoxide, is a serious problem during the winter season in Turkey, because primitive traditional coal stoves are still being used in many residents in Turkey. Similar data has also been reported in other countries in which the winter season was long and cold.[10,13] Although pesticide poisoning was very common in Iran,[4] such agents account for less than 1% of all poisoning in this study. This is, probably due to Ankara being a non-agricultural area.

Our data about duration of hospitalization (0.7 days) is in accordance with previous reports in developed countries.[1,18] While the duration of hospitalization was reported as less than 3 days for most of the patients in Finland,[20] Thomas *et al*[21] declared that mean hospital-stay for adult poisoning was 1.5 days in the UK.

Thomas *et al*[21] reported that mean hospital stay was increased in the elderly, in those who had received drugs associated with potential hazard. Similarly, we also found that all the cases of cardiovascular drug poisoning were hospitalized for longer than other drug poisoning.

There were no deaths reported during this study period, in contrary to the previous reports from developed countries.[3,8,20] We do not consider that the treatment policy in our emergency center was better than those centers. Probably, the most important reason is the fact that most of the serious cases in Turkey were dead before admission to the hospital. The other reasons could be as follows: parasuicide attempts were more common; analgesics, which were mainly ingested agent in Turkey, were infrequently fatal drugs, as compared to the other drugs (e.g. cardiovascular drugs).

According to reports of the Ministry of Health of the Turkish Republic, death ratio of the poisonings admitting to the hospitals throughout the country was reported as 1.2% in 1995.[6]

It is important to realize that this study is a hospital-based study, and hence it may be considered difficult to draw conclusions for the whole population of Turkey. However, by using the data of this study, it could be said that young females seemed to be the major risk group, and analgesics ingestion is probably the most common drug poisoning in Turkey. Further studies are necessary to collect more data throughout the country, and we believe that this data will be helpful not only for treatment of the patients but also for the prevention of suicidal and accidental poisoning.

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