

A PROSPECTIVE STUDY OF ACUTE POISONINGS IN A SAMPLE OF GREEK PATIENTS

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SUMMARY

Objectives. Acute poisoning is one of the most common situations managed in the emergency department. Significant differences have been reported concerning the prevalence and etiology of poisoning. This study aims to present the epidemiologic and clinical characteristics of poisonings in the region of Thrace in Northern Greece, where no similar studies have been performed.

Methods. A prospective study was carried out in our hospital's emergency department during 4 years (1999–2003). A total of 223 adult patients were admitted with acute poisoning, 87 males (39%) and 136 females (61%).

Results. Mean age of male and female patients was 37.1 years (standard deviation 16.1) and 33.4 years (standard deviation 14.5), respectively. Intoxications were more common in summer (34.1%). The median time between poisoning and presentation was 4 hours. Poisonings were more common in the urban population (64.1%). Psychotropes were the leading cause of poisoning in patients with a psychiatric disease (74.1%) and analgesics in all the other patients groups (34.8%). The clinical status on admission was: conscious (45.7%), confused (35.4%), precoma/ coma (18.9%). Haemodialysis was performed only in one patient and respiratory support was necessary in 10 patients. An antidote was administered in 73 patients. Median hospital stay was 1 day. Two patients died (0.9%).

Conclusions. Poisoning's aetiology varies significantly in different countries. Previous suicide attempts are common in these patients. Precipitating factors can be major depressive, or dysthymic disorders. The mortality rate is low.

Key words: poisoning, adults, epidemiology, clinical status

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INTRODUCTION

Self-poisoning is one of the most common situations managed by emergency care departments (1). The incidence of intoxications has increased up to 157 per 100,000 inhabitants in certain European countries (2). Poisonings represent up to 3.8% of the overall admissions in a medical department (3) and 0.7% of all emergency admissions (4).

Most patients presenting with intoxication are below the age of 40 years. Mean age is reported to be 33 years in Thessaloniki, Greece and the most frequent age group is 23–30 (3). Most European studies show a similar age variation. Mean age is 35.3 (Standard deviation – SD \pm 13.7) years in Vienne, France (1), 41 years in Frankfurt am Main, Germany (5), 36 years (SD: \pm 15, median: 32) in Madrid, Spain (2), 36 years in Barcelona, Spain (6), whereas, in Turkey, 63.6% of the patients were below the age of 25 (4).

Poisoning is found to be more common in females in most European countries. Females prevail over males in Belgium (56%) (7), Scotland (8), Greece (female-to-male ratio 1.97 to 1) (3) and Turkey (female-to-male ratio 3:1) (4). However, an equal prevalence is reported in Finland (9) and males prevail over females (51.3%) in a Spanish study (10).

Significant differences have also been reported about the etiology of poisoning and the medical history of this group of

patients (1, 3, 7, 8). Although hospitalization at the intensive care unit is needed in many circumstances (5, 6), mortality rate is rather low (2, 7, 9).

The aim of our study is to present the epidemiological characteristics of poisonings in the region of Thrace in Northern Greece, where no similar studies have been performed as far as we know. We studied the etiology, the medical history of these patients and their need for a specific treatment. A comparison was attempted with other European countries, in order to investigate the specific features of the Greek population.

METHODS

We carried out a prospective study concerning adult patients presenting with acute poisoning to the Regional General Hospital of Alexandroupoli. In four years time (1999–2003), a total of 223 patients were admitted to the emergency medical department of our hospital for an episode of acute poisoning. This hospital is responsible for all the inhabitants of the eastern part of Thrace, a Northern Greek province (about 100,000 inhabitants).

This sample of 223 patients consisted of 87 males (39%) and 136 females (61%), aged between 14 and 90 years. These patients represented 3.8% of the overall admissions to the medical departments for the same time period.

Patients were monitored upon admission in order to assess their clinical status. After a thorough clinical and neurological examination, the patients' hepatic, respiratory and renal functions were closely monitored in order to identify the presence of hepatic, respiratory, renal or multi-organ failure. Specific antidotes, respiratory support or haemodialysis were available when necessary.

When clinical status permitted an interview, patients were questioned about their age, address, medical history, the substance responsible for the poisoning, the existence of previous suicide attempts and the exact time of the poisoning. They were assured that these data would be confidential.

For the statistical analysis of patients' age in both sex groups, the t distribution was used, as the observations were sampled from a population with a normal distribution (assessed with a normal plot) and the variances of age in males and females were the same ($F=1.22$, $p=0.15$). For the time between ingestion of poison and presentation, as well as the time of hospitalization, a confidence interval for the median was used, because both variables were considerably skewed. For the other confidence intervals (95% CI), the normal approximation to the binomial distribution was used (11).

RESULTS

Poisonings were more common in females. The 95% confidence interval was 32.6 to 45.4% for males and 54.6 to 67.4% for females.

The mean age of male patients was 37.1 years (SD 16.1 – 95% CI: 33.6 to 40.5 years). The mean age of female patients was 33.4 years (SD 14.5 – 95% CI: 31 to 35.9 years). The mean age difference between sexes was 3.7 years (95% CI from -0.5 to 7.7 years, $p=0.08$). Therefore, female patients were slightly younger than males, although not at the level of significance.

The monthly incidence of poisonings is shown in Table 1. Intoxications were more common in summer (34.1%) (June, August and July).

The mean time between ingestion of poison and presentation was 4.8 hours (SD±4.87). The median time was 4 hours (95% CI for the median: 3 to 4 hours).

Table 1. Monthly incidence of poisoning

Month	Cases
January	19 (8.5%)
February	17 (7.6%)
March	21 (9.4%)
April	17 (7.6%)
May	21 (9.4%)
June	28 (12.6%)
July	23 (10.3%)
August	25 (11.2%)
September	17 (7.6%)
October	14 (6.3%)
November	10 (4.5%)
December	11 (5.0%)

Eighty of the patients (35.9%) lived in rural areas and 143 (64.1%) in urban environments, the 95% CI being 29.6 to 42.2% for the rural population and 57.8 to 70.4% for the urban population. Therefore, poisonings were more common in the urban population.

Substances responsible for the poisoning are shown in Table 2. In 41 cases, more than one toxic substances were taken. The more common combinations were psychotropes with alcohol (13 patients) and analgesics with alcohol (8 patients).

Medical history of the patients is shown in Table 3. Previous suicide attempts were reported in 14 patients (6.3%) and 12 of them had had a diagnosed psychiatric disease. Psychotropes were the more common cause of poisoning in the patients with a psychiatric disease: 80 cases (74.1%). Analgesics were the more common cause of poisoning in all the other patient groups: 40 cases (34.8%).

The clinical status of the patients on arrival is shown in Table 4. Twenty-two out of the 42 patients in precoma or coma had been intoxicated by opiates (52.4%). It is remarkable that 22 out of the 23 patients intoxicated by opiates were in precoma or coma.

Haemodialysis was performed in one patient and respiratory support was needed in 10 patients. Nineteen patients (8.5%) developed multi-organ failure. An antidote was administered in 73 patients (32.7%). The median hospital stay was 1 day (99% CI for the median: 1 to 2 days). Two patients died (0.9%). Both of them had taken a large quantity of Paraquat® (N,N'-dimethyl-4,4'-bipyridinium dichloride, a herbicide).

DISCUSSION AND CONCLUSIONS

Poisoning is found to be more common in females in most European countries. A female to male ratio of 1.56 was also found in our region. Our data also support the fact that most patients presenting with intoxication are below the age of 40 years. We also found that poisoning is more common in the urban population, a common feature in Greece (3).

The delay from ingestion of the poison to presentation is reported to be equal or longer than 4 hours (3, 9), as well as in our study.

A seasonal distribution is present in our population, with a peak in summer and June being the month with the highest incidence. A similar summer peak (37.5% of cases) has also been reported in the Greek population with July being the month with the highest incidence (23.7%) (3). On the other hand, the month with the highest incidence of poisoning in Spain was February (10). This discrepancy is probably due to the different aetiology of poisoning in different countries.

Psychotropes were the cause of the intoxication in most of our cases. Psychopharmaceuticals are also reported to be the leading cause in another Greek study (37.4%) (3), in France (benzodiazepines – 80%) (1, 12), Belgium (benzodiazepines – 55%) (7) and Croatia (benzodiazepines – 48%, antidepressants – 11%) (13). On the other hand, alcohol was responsible for poisoning in only 11.3% of our cases. Intoxication with alcohol is reported at low levels in another Greek study (8.4%) (3) and in Croatia (16%) (13). However, alcohol was the most common cause of poisoning in Spain (23 – 32.6%) (2, 10), Belgium (35.8%) (7), Scotland (63%) (8) and Finland (66.7%) (9). Analgesics are the leading cause in Turkey (29.7%) (4) but are also involved significantly in poisoning in Greece (32.6%) (3) and Belgium (13.3%) (7). Opiates and cocaine are responsible for

Table 3. Patients' medical history

History	No disease	Psychiatric			Context of stress	Other diseases
		Psychosis	Depression	Alcoholism		
Cases	34 (15.3%)	40 (17.9%)	61 (27.4%)	7 (3.1%)	41 (18.4%)	40 (17.9%)

Table 4. Clinical status of patients upon arrival

State	Conscious	Confused	Pre-coma	Coma
Cases	102 (45.7%)	79 (35.4%)	10 (4.5%)	32 (14.4%)

about 16% of the cases in Spain and Croatia (10, 13). In our region, the opiate intoxication was at rather lower level (9%).

The patients' clinical status upon arrival is generally good. Serious symptoms (e.g. unconsciousness, insufficient ventilation necessitating intubation, aspiration, convulsions or hypotension) occurred in 15% of cases in Finland (9). We found a rather high proportion of semi-comatose or comatose patients (18.9%), also observed in Croatia (29%) (13).

Previous suicide attempts were reported in 40% of the patients in Scotland and Croatia (8,13), a much higher proportion than the Greek one (6.3%). Precipitating factors are found to be major depressive disorders, dysthymic disorders, disorders with depressive mood or impulsive act, the patient's age and sex, concomitant health behaviour risk factors, economic status and quality of health care (14–18).

The mean overall hospitalization time varies between 24 hours and 3.3 days (3, 9). In our hospital, only 19% of the patients were hospitalized for more than 2 days.

Mortality rate is reported to be extremely low: 0.08% to 0.47% in Spain (2, 10), 0.3% in Belgium (7), 2.9% in a Greek study (3) and no fatalities in a Finnish one (9). We also had only 2 fatalities. However, our study is probably biased, as we had no data about intoxicated patients that died outside hospital never arriving at the emergency department. A similar study in Oslo found that 91.8% of all deaths by poisoning occur outside hospital (19) and raised the overall mortality rate up to 6%.

It should be noted that the population of our region has a rather low income and there are no major socio-economic differences even between the inhabitants of the rural or urban areas. Therefore, our results are possibly biased towards lower socio-economic populations.

In conclusion, poisoning is a rather common medical emergency. It is more prevalent on young females and usually due to psychotropes or analgesics. As a great proportion of all cases is observed in psychiatric patients, physicians are encouraged to recommend psychiatric care for people suffering from mental problems or depression. The role of family doctors is very important in the early diagnosis and advice of these patients.

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