ORIGINAL ARTICLE

Do emergency physicians need to know definitive treatments? Analysis of patients hospitalised for poisoning

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Abstract

Objective: To compare the hospitalisation rates and to examine the requirement for physicians in the Emergency Department to have knowledge of definitive treatment in poisoning cases.

Methods: The retrospective study examined the cases 589 adult patients who were admitted to the Emergency Department of Hacettepe University School of Medicine between January 1, 2003, and December 31, 2007, with poisoning. Epidemiological data and hospitalisation rates were compared statistically between the patients with good general medical condition, who required simple medical intervention and were discharged from the emergency service after a short period of observation; and those with poor general medical condition that required hospitalisation. SPSS 15 was used for statistical analysis.

Results: Out of the 589 patients, 256 (43.4%) were found to be in good general medical condition. There were 333 (56.5%) patients whose general medical condition was not good. Treatment of 244 (95.3%) patients with good general condition was completed within the Emergency Department and they were discharged. Treatment of 295 (88.6%) patients with poor general condition also did not require hospitalisation. Only 50 (8.4%) were hospitalised in an appropriate clinic and their treatment was completed in various clinics.

Conclusion: Of all the patients admitted with poisoning, the treatment of nearly all the patients in good medical condition and most of the patients whose general condition was not good was completed within the Emergency Department before they were discharged from the hospital. Even when the general condition of the patients was not good at the time of presentation, it was regulated by the physicians through definitive interventions.

Keywords: Poisoning, Hospitalisation, Emergency department. (JPMA 63: 165; 2013)

Introduction

As a result of the increase in emergency medical admissions in Turkey, the need for hospital beds is gradually increasing. Also, there is a problem of patient accumulation in the Emergency Department (ED), leading to over-crowding which is a common sight in Turkey as is the case in many countries.[1,2] According to the data of the Ministry of Health, the number of patients in Turkey receiving in-patient treatment increased by 93.7% between 2002 and 2008, while the number of inpatient beds only increased 16.2%.[3] On reviewing the ED admissions, it is observed that admissions have increased in time and, examining the rates of emergency admissions due to poisoning, it is seen that this rate is also gradually increasing in Turkey.[4]

The situation necessitates new arrangements in ED. Despite increasing the number of beds in hospitals, sometimes emergency physicians are required to carry out definitive treatment after completing the first intervention. This is especially the case with patients admitted to ED because of poisoning, some of whom are discharged after a simple medical intervention, while others may require intensive care. On the other hand, there is no clinical toxicologist in Turkey. The poisoning patients are followed up by anaesthesiologists and a few Internal Medicine physicians. As a result, emergency physicians should also have knowledge of definitive treatments (any therapy generally accepted as a specific cure of a condition), in order to complete the appropriate treatment after the first intervention.

This study compared the hospitalisation rates of the patients attending the ED as a result of poisoning, their follow-up rates in ED, and assessed the requirement for emergency physicians to have knowledge of definitive treatment of such cases.

Patients and Method

A total of 722 patients were admitted to the Department of Emergency Medicine of Hacettepe

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University School of Medicine between January 1, 2003, and December 31, 2007, with poisoning, as diagnosed according to the International Code of Disease (ICD). Carbon monoxide (CO) poisoning, drugs, ethanol, pesticides, insecticides poisoning and substance abuse patients were included in the study. Patients with food as the poisoning agent were excluded as sometimes it was recorded as a gastrointestinal problem. Also excluded were the record of insect-bite patients because the hospital is located in an urban area, and such cases are followed up at another hospital. The records of 126 patients contained incomplete information or were not accessible, which left the study sample with 596 patients. Epidemiological data (age, gender etc.) and clinical information, including the nature of the substance or drug involved, vital signs in the first physical examination, Glasgow Coma Scale (GCS), arterial blood gas analyses, carboxyhaemoglobin (COHb) level and the departments to which the patients were admitted, were collected from the clinical record.

Patients were categorised as either in 'good' or 'poor' general condition, according to their vital signs and laboratory findings. Patients of 'good' general condition who needed simple medical intervention before being quickly discharged from the ED were compared with those who had 'poor' general condition and required further management after hospitalisation.

Patients were categorised as being in 'good' general condition if: vital signs were stable; GCS of score 15; no acidosis in arterial blood gas analysis; and serum COHb level was below 15%. Patients were categorised as being in 'poor' general condition if any of the above parametres was not fulfilled. Seven patients whose general condition was 'good' in the first consultation but subsequently deteriorated in the follow-up assessment while they were still in the ED, were excluded from the study. The data of the remaining 589 patients were compared statistically.

Continuous variable was presented as mean ± standard deviation. Categorical variables were presented as frequencies and percentages. The data was analysed using SPSS 15.0.

Results

The number of CO poisoning was 249 (42.3%); ethanol poisoning 26 (4.4%); opioids 1 (0.2%); pesticide and insecticide poisoning 5 (0.8%); and drug poisoning 308 (52.2%) (Table-1). The mean age of the subjects was 31.7±12.7 years, and 430 (73.0%) of them were women. On admission, 41 (7.0%) patients had a GCS score of 14 and below; 45 (7.6%) were hypotensive (mean arterial pressure < 70 mm/Hg); 7 (1.2%) were hypertensive (mean arterial pressure > 110mm/Hg); while blood pressure was not checked in three (0.5%) patients on initial assessment. Eight (1.4%) patients had bradycardia (heart rate <60bpm); 110 (18.7%) patients had tachycardia (heart rate >100bpm); and the pulse rate was not recorded in one (0.2%) patient. Arterial blood gases analyses of 317 patients showed that 62 (19.6%) had acidosis (Ph<7.40). The serum COHb level of 99 (39.8%) of the 249 patients diagnosed with CO poisoning was under 15%, while it was found to be equal or above 15% in 150 (60.2%) patients.

Table-1: List of drugs causing poisoning.

Drugs	Frequency*	Percent
Antidepressants	92	15.6
NSAID (excluded aspirin)	56	9.5
Antibiotics	51	8.7
Paracetamol	36	6.1
Benzodiazepine	34	5.8
Antipsychotics	26	4.4
Antihistaminic	25	4.2
Antiepileptic	20	3.4
GIS related drugs	20	3.4
Antigribal	17	2.9
Aspirin	11	1.9
Antihypertensive	6	1
Oral contraceptive drugs	5	0.8
Alcohol	26	5.4
Pesticide and insecticide	5	0.8
Opioids	1	0.2
Others	103	17.5

*138 (40.5%) of 340 patients with drug poisoning took two or more drugs. 95 (27.9%) patients took two drugs, 32 (9.4%) patients 3 drugs, 9 (2.6%) patients 4 drugs, and 2 (0.6%) patients took 5 drugs.

Categorisation of patients according to their vital signs and laboratory findings showed that 256 (43.4%) were in 'good' general condition, while 333 (56.5%) were in 'poor' general condition. Of the total, 31 (5.3%) patients were hospitalised within the Anaesthesia Intensive Care Unit (ICU); 10 (1.7%) in Internal Medicine ICU; and nine (1.5%) in other departments. The remaining 539 (91.5%) patients were followed up within the ED.

Of the 256 patients categorised as being in 'good' general condition, 244 (95.3%) completed the treatment within the ED and were then discharged. However, the remaining 12 (4.7%) patients, poisoned with cardiotoxic or long-acting drugs, were hospitalised

Table-2: Treatment in ED and hospitalistation rate.

	Patients treated in ED	Patients treated in AICU	Patients treated in Internal Medicine ICU	Other	Total
Patients categorised in good general condition	244 (41.4%)	6 (1.0%)	0	6 (1.0%)	256 (43.4%)
Patients categorised in poor general condition	295 (50.0%)	25 (4.2%)	10 (1.6%)	3 (0.5%)	333 (56.5%)
Total number of patients	539 (91.5%)	31 (5.2%)	10 (1.6%)	9 (1.5%)	589 (100%)

ED: Emergency Department. AICU: Anaesthesiology Intensive Care Unit. ICU: Intensive Care Unit.

Table-3: Follow-up period.

	Patients treated in ED		Patients hospitalised in AICU, Internal Medicine ICU and Other Services		
Follow-up period	Patients categorised in good general condition	Patients categorised in poor general condition	Patients categorised in good general condition	Patients categorised in poor general condition	Total
Less than 24 hours	161(27.3%)	168 (28.5%)	0	0	329 (55.8%)
24-47 hours	69 (11.7%)	89 (15.1%)	7 (1.1%)	3 (0.5%)	168 (28.5%)
48-71 hours	7 (1.1%)	13 (2.2%)	3 (0.5%)	12 (2.0%)	35 (5.9%)
72-95 hours	4 (0.6%)	11 (1.8%)	1 (0.1%)	16 (2.7%)	32 (5.4%)
96 hours or more	3 (0.5%)	14 (2.3%)	1 (0.1%)	7 (1.1%)	25 (4.2%)
Total	244	295	12	38	589

ED: Emergency Department. AICU: Anaesthesiology Intensive Care Unit. ICU: Intensive Care Unit.

for observation. Of the 333 patients categorised as being in 'poor' general condition, 295 (88.6%) completed treatment within the ED. The remaining 38 patients required further treatment; 25 (7.5%) were hospitalised in Anaesthesia ICU, 10 (3%) in Internal Medicine ICU, and 3 (0.9%) in other departments. Of these 38 patients, 34 (89.47%) were transferred to other departments within the first 24 hours, while 4 (10.52%) were transferred to other services after having management in the ED for at least 24 hours. The patients who were followed up within the ED or treated by hospitalisation in appropriate services and the follow up periods were noted separately (Table-2 and 3).

Discussion

Increased emergency attendance causes long wait for non-critical patients, and increases patient dissatisfaction, while delayed admissions to relevant departments for definitive treatment compromise patient comfort and the quality of treatment.[5,6] The fundamental reasons for the increase in adult emergency admissions are: increased number of people registered with health insurance; admission of non-urgent patients to ED increased patient expectations; non-hospitalisation of elderly patients for a number of reasons, and the subsequent admission of these patients to ED.[6,7] The failure of hospital bed capacity to keep pace with the increasing rate of emergency admission together with the outflow blockage of transferring patients out of ED to other departments contribution to the overcrowding of ED.[1,3,6]

Poisoning cases are an important patient group among all admissions to ED as patients require urgent intervention and sometimes intensive care.[8] A small number of poisoning patients 12 (4.7%) with 'good' general condition were hospitalised to specialty wards with subsequent follow-up. Seven of them were admitted for tricyclic anti-depressant poisoning while five were admitted for carbon monoxide poisoning. Nearly all of the patients in 'good' general condition were successfully treated within the emergency department. Although a great number of patients in 'poor' general condition required consultation of other specialties, these patients were kept in the ED due to lack of hospital beds, and they were followed up in ED. In this patient group, treatment of all patients, including those in critical condition, was carried out by emergency physicians. Even among the 38 patients in 'poor' general condition who were hospitalised, they were only transferred to the appropriate service after they had been followed up within the ED for at least 24 hours.

The most important problem in a crowded ED is that hospitalisation in other departments cannot be arranged early, and patients stay within the ED during their treatment. The longer the patients stay in the ED, the worse is the magnitude of overcrowding. Even

though many hospitals do not have such problems, a lack of hospital beds (open bed/available beds) is a major problem within some hospitals in large cities. As a result, the transfer of most patients to the appropriate services is delayed, or their treatment has to be completed within the ED[9,10] Although the relevant specialties are consulted during their ED stay, there is an increasing requirement for emergency physicians to have knowledge about the anticipated progress of the poisoning, related investigations, monitoring and definitive treatments, since some patients may be treated entirely at the ED. To achieve this, in addition to other solutions, it is necessary to strengthen the training of definitive treatment, especially patients of poisoning, for ED physicians.

The study has its limitations as the sampling size was not calculated in view of its cross-sectional nature. The results, as such, should be supported by large prospective, multi-centre studies.

Conclusion

The increasing demands on hospital emergency services require new arrangements in the management of EDs. Since the treatment of many patients is increasingly completed within the ED, appropriate training of definitive treatments should be provided for ED physicians. The treatment processes will, thus, be more qualified, and will help reduce potential errors.

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