

Retrospective Analysis Of 11,383 Patients Admitted To The Emergency Department With Head Trauma Within 2 Years

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Abstract

Traumas are one of the most common reasons of mortality and morbidity in the world. The WHO (World Health Organization) estimates that approximately 3.5 billion people die from the primary and secondary effects of a trauma every year (1,2,3). At the present time, trauma is the first reason of mortality in younger ages, and is the third reason after cardiovascular disease and cancer in all age groups (4,5).

Head trauma is one of the most important causes of increasing mortality and morbidity. The studies conducted in the US suggest that every year 200,000 patients die from head traumas. In the world traffic accidents are one of the most common reasons of head traumas (5, 6, 7). In Turkey in patients with head trauma (adult and pediatric ages) the causes of the traumas are traffic accidents, falls and assault (65%) (6-8). Traumas have high mortality and morbidity rates and economic burdens. But epidemiological studies about head traumas are rare and preventive medicine is required (2, 8, 9).

In this study 11,383 patients who visited the Elazig Training and Research Hospital with head trauma were examined retrospectively.

INTRODUCTION

Traumas are one of the most common reasons of mortality and morbidity in the world. The WHO (World Health Organization) estimates that approximately 3.5 billion people die from the primary and secondary effects of a trauma every year (1,2,3). At the present time, trauma is the first reason of mortality in younger ages, and is the third reason after cardiovascular disease and cancer in all age groups (4,5).

Head trauma is one of the most important causes of increasing mortality and morbidity. The studies conducted in the US suggest that every year 200,000 patients die from head traumas. In the world traffic accidents are one of the most common reasons of head traumas (5, 6, 7). In Turkey in patients with head trauma (adult and pediatric ages) the causes of the traumas are traffic accidents, falls and assault (65%) (6-8). Traumas have high mortality and morbidity rates and economic burdens. But epidemiological studies about head traumas are rare and preventive medicine is required (2, 8, 9).

In this study 11,383 patients who visited the Elazig Training and Research Hospital with head trauma were examined

retrospectively.

MATERIAL AND METHODS

We included the patients who visited our emergency department with head trauma between 01.11.2010 and 01.11.2012 of ages up to 85. The patients were evaluated for age, gender, etiology, Glasgow Coma Scale, radiological findings, the results of treatment, surgical rates and mortality rates retrospectively. Head trauma was classified as mild (GCS 13-15), moderate (GCS 9-12), high (GCS 3-8). The hospitalization time and outcomes (hospitalization, discharge) were analyzed. The data of the patients who underwent surgery were collected. The patient's data were calculated as percent of average.

RESULTS

11,383 patients aged from newborn to 85 who visited to emergency ward with minor or major head trauma were included in this study. The cases were divided into two groups. Neurosurgery consultation was done or the patient was discharged by emergency specialist. Of the 11,383 cases 7398 were falls, 2959 were traffic accident, 1024 were

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assault (table 1). Especially during summer there is an increase at the patients who are up to 10 years old and who visit the emergency center due to falls. Traffic accidents were the first reason in adults. The patients' gender was generally male especially those who visited the emergency department with traffic accidents or falls from height. The most common age of the traumas was 10 to 35. 7614 were male and 4199 were female. For 22% (2400 patients) neurosurgery consultation was needed and 78% (8983 patients) were discharged by an emergency specialist. Glasgow Coma Scale was 3-8 in 65 cases , 9-12 in 250 cases and 13-15 in 11,068 cases. (table 2)

Table 1

Patient demographics

	Number	Percentages
Falls	8537	75
Traffic accident	1821	16
Assault	1024	9

Table 2

Glasgow Coma Scale

Glasgow Coma Scale	High(0-8)	Moderate(9-12)	Mild(13-15)
	0.5%, 65	2.2%, 250	87. 3%, 11068

From 11,383 patients, CT was not performed in 19.9% (2276 patients). CT findings were normal in 76.3% (8657 cases), fractures were detected in 2.8% (326 cases). 2.7% (308 of these fractures) were linear and 0.1% (18 were depression). Intraparenchymal lesion was detected in 0.74% (85 cases), epidural hematoma in 0.13% (15 cases), subdural hematoma in 0.09% (11 cases), subarachnoid hemorrhage in 0.02% (23 cases), contusion in 0.029% (34 cases) and traumatic ICH in 2 cases.(table 4)

Sixty-five patients who were consulted by a neurosurgeon were treated at the intensive care unit, 13.5% (325 patients) were treated at neurosurgery service. 83.8% (2100 patients) were followed up at the emergency ward and discharged with medical treatment. The mean hospitalization time was 1-20 days (mean 8) at 390 patients.(table 3)

Table 3

Patient data

Gender	Male: 64.4%,7614 Female:35.6%,4199
Age	0/85 years old
Neurosurgery consultation rate	22%,2400
Surgery performed	1.91%,46
Intensive care	2.7%,65
Hospitalization and observation	13.5%,325
Observation at emergency	83.8%,2100

Table 4

CT findings

Normal	8657
Linear fracture	316
Depression fracture	18
Subdural hematoma	11
Epidural hematoma	15
Subarachnoid hemorrhage and contusion	23
Contusion	34
Diffuse axonal injury	4
Traumatic cerebral edema	36
Traumatic ICH	2
TOTAL	11,383

After neurological examination at the emergency service, A-P (anterior-posterior) and lateral x-ray of the head and if necessary cervical x-ray, and thoraco-lumbar x-ray were performed. Patients with Glasgow Coma Scale: 13-15 and normal cranial x-ray were followed, and when Glasgow Coma Scale decreased, CT was performed. For a patient with Glasgow Coma Scale under 12 and fracture at cranial x-ray, a CT was performed routinely.

Surgery was performed because of depression fracture, epidural hematoma and subdural hematoma. Linear fractures, subgaleal pathologies, subarachnoid hemorrhage and cerebral edema were treated by medical treatment or by observation. Surgery was needed at 1.91% (46 patients). 28.6% (18 cases) of them were depression fracture, 21.4% (15 cases) were epidural hematoma, 11 were subdural hematoma and 2 were traumatic intracerebral hematoma. Mortality rate was 1.2%.

DISCUSSION

With this study we aimed to add novel data to our epidemiological data in our country. At present, traumas and as a result, head traumas are common at the emergency center. Mortality, long hospitalization time and its social, psychological and economical effects are public health problems and this must be analyzed. Morbidity, long time rehabilitation and psychological support programmes increase the economic cost (5-10-11)

In our country, the most common causes of death from head traumas are traffic accident and falls from height (4-6-7). At early childhood, fall from height is the most common cause. In developed countries, traumas are the first cause of death (1-5-6). At epidemiological studies, head traumas are common in male gender. (12) In our study, 35.6% (4199 cases) were female, 64.4% (7614 cases) were male and the male/female rate was 1.81. These results correlated with the literature.

Ötken at al. (13) showed that 83.3% of the cases had mild head trauma, 6.8% had moderate and 9.9% had a heavy head

trauma. Murgio et al. (14) made two studies and the rates were 56.4%, 38.9%, 4.7% in the first study and 79.1% , 18% , 2.9% in the second study respectively. In our study these rates were 87.3%, 2.2% and 0.5% respectively. Our findings did not correlate with previous studies.

The reason of low rates of mild head traumas is that our hospital is sited at the city center, neighbour to another state hospital and university hospital. And also patients with heavy head trauma are usually dispatched to the university hospital.

Falls take the first place at the etiologic reasons of the head traumas. The second is traffic accident and assault is third.(12) At our study falls were at the first place and this correlated with the literature.

CT is gold standard at evaluation of the patients with head traumas at the emergency center. (15) The indications are still controversial. Because of the intense workload at the emergency wards, neurological examination cannot be made exactly. Sometimes CT is performed before routine X-ray and neurological examination. And these unnecessary tests affect the hospital and states economy adversely. In our study, CT request rate was 76 % and pathological findings were detected at 4%. As a result our CT request rate was high. The reasons of these high rates are the high intensity of the workload at emergency wards, inexact neurological examination and fear of our doctors about misdiagnosis. In addition, courses about CT indications should be useful. Forty six (1.91%) patients underwent surgery. The first indication of the surgery was depression fracture. The second was subdural hematoma. At Yuceer et al's study the surgery rate was 11.3% and the most common cause was epidural hematoma (50%)(16). In another study that was made at our country the operation rate was 10.5% and the most common causes were depression fracture and epidural hematoma (12). Compared to the literature review, our surgery rate was low. The causes of this condition are, included age groups to this study, two state hospital and university hospital's neighborhood status and the choice of 112 emergency services in the university hospital. In this study, hospitalized 385 (98.8%) patients were treated and 5 (1.2%) patients died.

CONCLUSION

In our region the most common causes of head traumas are traffic accidents and falls. Especially in summer, falls are at the first place in childhood and traffic accidents rank first in adults.

To decrease the mortality and morbidity of head traumas,

constructing family and community awareness and taking protective measures before traumas are needed. After trauma, a full-fledged intensive care and qualified staff is important.(1-5-11)

As it is a public health problem, education at early childhood and compliance with the traffic rules should decrease the head traumas and economic burden.

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