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Evaluation of trauma patients admitted to the emergency department of in Mogadishu Training and Research Hospital, Somalia: Cross-sectional study of 1106 patients

Somali Mogadişu'daki eğitim ve araştırma hastanesi acil servisine başvuran travma hastalarının değerlendirilmesi: 1106 hastanın kesitsel çalışması

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Abstract

Aim: Trauma-related injuries are among the most pressing issues today, causing economic, social, and healthcare burdens. The aim of this study is to better manage and approach trauma patients by comparing our results with the literature, and reach standards set by developed countries.

Methods: Data of patients who were admitted to the emergency service of Mogadishu Somalia Turkish Training and Research Hospital with trauma between 1 September 2017 and 30 April 2018 were retrospectively obtained from the hospital registry and patient files. Demographic data such as the age, gender, means of injury, site of injury, department of hospitalization and discharge/death records were recorded and analyzed. Descriptive statistics and chi-square test were used. $P<0.05$ was considered statistically significant.

Results: Among 11225 patients admitted to the emergency department, 1106 were trauma patients. 29.3% were females and 70.7% were males. 49.9% of the patients (n=551) were discharged from the emergency service after follow-up, and 50.1% (n=541) were admitted to various departments. 14 patients died in the emergency service.

Conclusion: Traumas constitute about a quarter of referrals to the emergency service in developed countries. In Somalia, this ratio was about 1:10. Proper management during the pre-hospitalization and hospitalization periods and transferal of patients when needed may help reduce the morbidity and mortality of trauma patients.

Keywords: Emergency medicine, Trauma patients, Somalia

Öz

Amaç: Yaralanmalar günümüzde en önemli konular arasındadır ve ekonomik, sosyal ve sağlıkla ilgili sorunlara neden olmaktadır. Bu çalışmanın amacı hastaneye başvuran travma hastalarına yaklaşım ve yönetiminin, bu çalışma sonuçları ve literatür bilgileri ile kıyaslama yaparak daha iyi hale getirilmesi ve gelişmiş ülkelerdeki standardizasyonu yakalaması için katkı sağlamaktır.

Yöntemler: 01 Eylül 2017 ve 30 Nisan 2018 tarihleri arasında 8 aylık dönemde hastanemiz acil servisine başvuran hastaların verileri hastane bilgi otomasyon ve dosya kayıtlarından yararlanılarak retrospektrif olarak toplandı. Çalışmaya alınan hastaların yaş, cinsiyet, yaralanma mekanizmaları, yaralanma bölgesi ve yatış verilen servis, taburculuk / eksitus kayıtları değerlendirmeye alındı. Analiz için SPSS 22 programı kullanıldı. Descriptives, Chi-Square istatistik testleri kullanılarak $P<0,05$ anlamlı olacak şekilde kabul edildi.

Bulgular: Hastanemize başvuran 11225 hastanın 1106 tanesi travma hastası olarak acil servisimize başvurmuşlardır. Çalışmaya alınan hastaların yüzde 29,3'ü kadın hasta 70,7%'i ise erkek hasta olduğu görülmüştür. Çalışmamızda alınan hastalardan 551 (49,9%) hasta acil servisten takipleri sonrası taburcu edilmişlerdir. 541 hasta ise çeşitli bölümlere yatışı yapılmıştır. Başvuran hastalarımızdan 14 hastamız ise acil serviste eksitus oldu.

Sonuç: Travmalar gelişmiş ülkelerde acil servise başvuruların yaklaşık olarak dörtte birini oluşturmaktadır. Somali'de yaptığımız bu çalışmada ise yaklaşık 10'da 1 oranında olduğu görülmüştür. Travma hastalarının yönetiminde hastane öncesi ve hastane döneminin iyi yönetilmesi, uygun hastaneye uygun şekilde transport edilmesi travma hastalarında morbidite ve mortaliteyi azaltmaya yardımcı olabilir.

Anahtar kelimeler: Acil servis, Travma hastaları, Somali

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Introduction

Trauma-related injuries are among the most pressing issues today, causing economic, social and healthcare burdens [1]. In addition to being one of the major causes of death, they constitute an integral public health problem since young people are more commonly affected, which leads to concomitant material and psychological/spiritual losses [2]. Trauma is ranked third to fourth among all mortality causes in the world, first in mortality between ages 1 and 44 [3], and first in mortality in the emergency service [4]. Injury may occur due to thermal, radiation-related, explosive or mechanical causes. Mechanical traumas may present as blunt or penetrating injuries, and include traffic accidents, falls, firearms and knife injuries [5]. Approach to patients with multiple injuries is examined with regards to the pre-hospitalization and hospitalization periods. Pre-hospitalization period includes arrival to the hospital, communication and information exchange with the patient, detailed anamnesis about the injury, triage and carrying out the appropriate transport protocol to the most suitable hospital [6]. Delayed treatment of a patient with multiple injuries not only extends the hospitalization period of the patient, but can also lead to organ failure and death [7].

In this study, we aimed to retrospectively classify trauma patients referred to the emergency department of Mogadishu Somalia Turkish Training and Research Hospital (MSTERH) from a demographic and epidemiological perspective, identify the needs and deficiencies of our emergency department and improve the service quality in our hospital while contributing to the literature.

Materials and methods

Study population

The data of 11225 patients who were admitted to MSTERH Emergency Department between 01.09.2017 and 30.04.2018 were examined retrospectively. Using the Hospital Information Management System (HIMS) software, the ages, genders, date, reason and department of admissions, mechanism of injuries, injury sites and ICD-10 codes of trauma patients were obtained. Consultation notes and death records of patients did not exist, hence were not included. The data of patients injured in the major explosion in October were excluded from the study since they had missing elements compared with the data we used in our study. Ethics committee approval was obtained from Mogadishu Somalia Turkish Training and Research Hospital on 20.02.2019 (No:116 /5550-615) and the study was conducted in accordance with the Declaration of Helsinki and its later amendments.

Study design

1106 patients out of 11225 were admitted to the emergency department due to trauma, and classified based on gender, medical condition, department of admission, the localization and extent of injury and discharge/death status. Location of injuries included the head and neck region, thorax, abdomen, and extremities. Patients were admitted to Orthopedics and Traumatology, Neurosurgery, General and Pediatric surgery, Cardiovascular and Thoracic Surgery, Plastic Surgery and Otorhinolaryngology and Ophthalmology (the latter two were classified as "other") departments. The "Abbreviated Injury Scale" (AIS) was used for patients with multiple traumas, which was defined as trauma in two or more sites [8, 9], and a severity code was used to classify each injury as minor, moderate, serious, severe, critical, virtually unsurvivable maximum injury and unknown.

Statistical analysis

The SPSS 22.0 software was used for data analysis. Descriptive statistics were performed. Data was presented in percentages. Chi-square test was used to compare data and $P<0.05$ was considered statistically significant.

Results

Out of 1106 trauma patients who were referred to the emergency department of MSTTRH in Somalia, 29.3% (n=324) were female and 70.7% (n=782) were male ($P<0.001$). Mean ages of female, male and all patients were 30.7 (22.34), 27.3 (16.86) and 28.34 (18.68), respectively. Youngest and oldest of all patients were 1 and 91 years old. The mean ages of all categories are presented in Table 3. Traffic accidents were the most common cause of trauma among all patients and males were more frequently injured with gunshot and explosions compared to females (Table 1). The mean age of patients who died in the emergency service was 12.8 (3.5).

The injury sites in decreasing order of frequency were lower and upper extremities (34.2%, n=379), the head and neck region (32.7%, n=362), abdomen (13.6%, n=149), multiple sites (11.1%, n=123) and thorax (8.4%, n=93) (Table 4). The frequency of patients admitted to the Orthopedics and Traumatology and Neurosurgery departments were 18.2% and 20.3%, respectively (Table 5).

Table 1: Injury mechanisms of patients according to gender

Gender	Explosion	Gun-shot	Burn, penetrant, dog bite, electric shock	Car accident	Fall	Violence, Other blunt trauma, etc.	Total	P-value
Female	27	23	19	144	95	16	324	<0.001
Male	121	109	74	308	129	41	782	
Total	148	132	93	452	224	57	1106	

Table 2: Injury mechanisms of patients

Injury mechanism	Frequency	%
Explosion	148	13.4
Gun shot	132	11.9
Burn, penetrant, dog bite, electrical crush	93	8.3
Car accident	452	40.9
Fall	224	20.3
Violence and other blunt trauma	57	5.1

Table 3: Relationship between age and cause of trauma

Trauma mechanism	Age Mean	Age Min - Max	*P*-value
Explosion	29.65	1 - 67	0.091
Gun shot	31.25	12 – 65	
Burn, penetrant, dog bite, electrical crush	15.65	1 - 48	
Car accident	25.64	2 - 83	
Fall	37.21	1 - 91	
Violence and other blunt trauma	25.42	10- 60	

Table 4: Distribution of patients according to injury site

Injury site	Frequency	%
Extremities	379	34.2
Head	362	32.7
Thorax	93	8.4
Abdomen	149	13.6
Multiple sites	123	11.1
Total	1106	100.0

Table 5: Admission service of patients

Department of admission	Frequency	%
Discharge	551	49.8
Mortality in the emergency Department	14	1.4
Orthopedics and Traumatology	202	18.2
General & Pediatric Surgery	36	3.3
Neurosurgery	224	20.2
Thoracic–Cardiovascular Surgery	37	3.3
Plastic Surgery	36	3.3
Otorhinolaryngology, ophthalmology, etc.	6	0.5
Total	1106	100.0

Discussion

Traumas constitute approximately one-fourth of emergency service admissions in developed countries [10]. In a study conducted in the United States, the rate of admissions to the emergency department was reported as 14.3% [4], while another study in the US revealed that 37% of these admissions were due to trauma [11]. Akoglu et al. [12] stated that trauma patients constituted 3% of all patients admitted to the emergency department in Turkey. This rate was 9.86% in our study. The significantly higher rate of males in our study may be explained by the fact that men in Somalia spend more time in social environments where they are exposed to trauma.

A previous study reported that the most common cause of trauma in the US was falling (44.9%) [13], while in our study, falling came second (20.3%) to car accidents (40.9%). In a country such as Somalia where bombing and shooting are frequent, we would argue that these rates are low.

In younger patients, assaults and motor vehicle injuries are among the most common causes of traumatic injury. Large international studies have reported that trauma patients aged >80 years are the largest contributors to the increase in mortality among all trauma cases [14]. In contrast, young adults remaining at the scene in Somalia, where bombings and sporadic fighting are extensive, have contributed to the increase in mortality. Less serious cases are admitted to the emergency departments, and injured children are more susceptible to hypovolemia after trauma.

In their study conducted in Turkey, Durdu et al. [15] reported that 44.8% of injuries (n=567) were in the upper extremity, 34.7% (n=440) in the head and neck, 27.2% (n=344) in the lower extremity, 15.7% (n=198) in the face, 11.5% (n=146) in the thorax, and 7.4% (n=93) in the abdomen. The difference between these results and ours was attributed to different injury mechanisms in Somalia and Turkey arising from contrasting socio-cultural structures.

Varol et al. [16] stated that among patients injured by traffic accident who were examined in their study, 54.2% of those admitted to the emergency service were discharged, 8.5% were admitted to the Orthopedics and Traumatology department and 8.2% were admitted to the Neurosurgery department. In our study, 18.2% of all trauma patients were admitted to the Orthopedics and Traumatology department and 20.3% to the Neurosurgery department. In Durdu et al.'s study [15], 85% of the patients admitted to the emergency services were discharged after monitoring and treatment. Akin to the above-mentioned studies, the discharge rate from the emergency department was 49.8% (n= 551) in our study. 14 patients died in the emergency department. Local trauma patients who were not admitted to the external services were discharged after being managed in accordance with their indications in the emergency service examination room.

Although patients older than 65 years constitute 6.7% of the total population in Turkey, 22% of all hospitalized trauma patients are older than 65 years. The same rates for the US are 12% and 23%, respectively. Our results revealed that the rate of hospitalized trauma patients older than 65 years in Somalia was only 6.7% [12]. It is known that elderly patients are generally more prone to trauma. However, the lower mean age in our study, unlike in the other countries, can be explained by the shorter life expectancy in Somalia compared to other developed countries.

Limitation

The numbers of local trauma and multiple trauma patients are similar. However, as stated in the "Methods" section, several difficulties were encountered during the identification of multiple traumas. Although a multiple trauma patient is defined as having an Injury Severity Score (ISS) of ≥16, this definition has been designed to determine the long-term mortality and morbidity rather the classification of patients [17]. It was determined that there was not enough file information to use the ISS during our retrospective review. Similarly, all scoring systems such as "Comprehensive Research Injury Scale" [18], "Trauma Injury Severity Score" [19] and "A Severity Characterization Of Trauma" recommended by the trauma committee of the American College of Surgeons required more information than the data we obtained during our retrospective review [20]. We believe that classification of multiple and local trauma patients we performed using the multiple and local trauma conditions specified in the AIS system may give different results with the use of ISS.

Conclusion

Traumas constitute about a quarter of referrals to the emergency service in developed countries. In Somalia, this ratio was about 1:10. Proper management during the pre-hospitalization and hospitalization periods and transferal of patients when needed may help reduce the morbidity and mortality of trauma patients.

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