

Received: 05 July 2023 / Accepted: 17 August 2023 / Published online: 31 August 2023

DOI 10.34689/SH.2023.25.4.019

UDC 614.8.067.3

EVALUATION OF FORENSIC CASES PRESENTED TO THE EMERGENCY MEDICINE CLINIC BETWEEN FEBRUARY 1, 2023, AND MARCH 30, 2023

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Summary

Introduction: Emergency Medicine is a specialized field dedicated to providing immediate care to patients with acute, undifferentiated, and undiagnosed illnesses or injuries. Its focus lies in resuscitating and stabilizing patients, making them suitable for general care or identifying those who require more advanced treatment within an undifferentiated patient pool. This study centers on forensic cases, which encompass incidents resulting from human actions, such as assault, traffic accidents, firearm injuries, and other similar situations. Medical professionals in the emergency department not only have the responsibility to diagnose and provide medical interventions but also to assess whether the incident qualifies as a forensic case and report it to legal authorities.

Method: The study was conducted at Başkent University's Emergency Medicine Clinic, Ankara, Türkiye, with ethical approval. Data were collected from February 1, 2023, to March 30, 2023, and included demographic information, comorbidities, laboratory results, imaging studies, hospitalization details, consultation records, morbidity, and mortality statistics. Statistical analyses were performed using SPSS version 25.0.

Results: A total of 221 patients were included in the study, with an average age of 46.32 years, of which 55.2% were female. The most common reason for seeking emergency care was earthquake-related injuries (45.25%), followed by occupational accidents (13.12%), falls (11.76%), assault (8.6%), and burns (7.69%). Most patients (74.66%) sought medical attention during daytime hours. Consultations were obtained in 43.44% of cases, primarily in orthopedics (17.64%). A total of 7.69% of patients were hospitalized, with an average length of stay of 17.13 days. Mortality rates were higher among earthquake-related cases (76.47%) compared to other reasons.

The study highlighted the prevalence of forensic cases during daytime hours, with more severe injuries presenting at night. Notably, earthquake-related incidents constituted a significant portion of cases, likely influenced by a recent major earthquake. The study also revealed that orthopedic and general surgery consultations were most common, possibly reflecting the industrial nature of the city. Mortality rates were highest among earthquake-related cases, emphasizing the importance of preparedness for disaster-related medical needs.

Conclusion: This study sheds light on the patterns of forensic cases in an emergency department, with daytime hours seeing a higher volume of cases but nighttime admissions often indicating more severe injuries. The findings emphasize the need for readiness in responding to disaster-related incidents, as evidenced by the earthquake-related cases' higher mortality rates.

Keywords: Forensic cases, earthquake victims.

Резюме

ОЦЕНКА СУДЕБНО-МЕДИЦИНСКИХ СЛУЧАЕВ, ПРЕДСТАВЛЕННЫХ В ОТДЕЛЕНИЕ НЕОТЛОЖНОЙ МЕДИЦИНЫ В ПЕРИОД С 1 ФЕВРАЛЯ 2023 ГОДА ПО 30 МАРТА 2023 ГОДА

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Введение: Неотложная медицина — это специализированная область, посвященная оказанию неотложной помощи пациентам с острыми, недифференцированными и недиагностированными заболеваниями или травмами. Основное внимание уделяется реанимации и стабилизации пациентов, обеспечению общего ухода или выявлению тех, кто нуждается в более квалифицированном лечении среди всех пациентов. Это исследование сосредоточено на судебно-медицинских случаях, которые относятся к инцидентам, возникшим в результате действий человека, таких как нападения, дорожно-транспортные происшествия, травмы от огнестрельного оружия и другие подобные ситуации. Медицинские работники отделения неотложной помощи не только обязаны поставить диагноз и оказать медицинское вмешательство, но также оценить, квалифицируется ли инцидент как судебно-медицинское дело, и сообщить об этом в юридические органы.

Материалы и методы: Исследование проводилось в Клинике неотложной медицинской помощи Университета Башкент, Анкара, Турция, с этическим одобрением. Данные были собраны с 1 февраля 2023 г. по 30 марта 2023 г. и

включали демографическую информацию, сопутствующие заболевания, результаты лабораторных исследований, визуализационные исследования, подробности госпитализации, записи консультаций, статистику заболеваемости и смертности. Статистический анализ проводился с использованием SPSS версии 25.0.

Результаты: В исследование был включен 221 пациент со средним возрастом 46,32 года, из которых 55,2% составляли женщины. Самой распространенной причиной обращения за неотложной помощью были травмы, связанные с землетрясением (45,25%), за ними следовали несчастные случаи на производстве (13,12%), падения (11,76%), нападения (8,6%) и ожоги (7,69%). Большинство пациентов (74,66%) обращались за медицинской помощью в дневное время. Консультации были получены в 43,44% случаев, преимущественно по ортопедии (17,64%). Госпитализировано 7,69% пациентов со средней продолжительностью пребывания 17,13 дня. Уровень смертности был выше среди случаев, связанных с землетрясением (76,47%), по сравнению с другими причинами.

Исследование выявило преобладание судебно-медицинских экспертиз в дневное время, при этом более серьезные травмы наблюдаются в ночное время. Примечательно, что значительную часть случаев составляли инциденты, связанные с землетрясениями, вероятно, под влиянием недавнего крупного землетрясения. Исследование также показало, что консультации ортопедов и хирургов были наиболее распространены, что, возможно, отражает промышленный характер города. Уровень смертности был самым высоким среди случаев, связанных с землетрясением, что подчеркивает важность готовности к оказанию медицинской помощи в связи со стихийным бедствием.

Заключение: Это исследование проливает свет на закономерности судебно-медицинской экспертизы в отделениях неотложной помощи: в дневные часы наблюдается большее количество случаев, а ночные госпитализации часто указывают на более серьезные травмы. Результаты подчеркивают необходимость готовности реагировать на инциденты, связанные со стихийными бедствиями, о чем свидетельствует более высокий уровень смертности от землетрясений.

Ключевые слова: судебно-медицинские дела, жертвы землетрясения.

Түйіндеме

2023 ЖЫЛДЫҢ 1 АҚПАНЫ МЕН 2023 ЖЫЛДЫҢ 30 НАУРЫЗЫ АРАЛЫҒЫНДА ЖЕДЕЛ ЖӘРДЕМ БӨЛІМІНЕ ҰСЫНЫЛҒАН СОТ-МЕДИЦИНАЛЫҚ ІСТЕРДІ БАҒАЛАУ

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Кіріспе: Жедел медициналық көмек – жедел, сараланбаған және диагнозы қойылмаған ауруы немесе жарақаты бар науқастарға шұғыл көмек көрсетуге арналған мамандандырылған сала. Пациенттерді реанимациялауға және тұрақтандыруға, жалпы көмек көрсетуге немесе барлық науқастардың арасында неғұрлым жетілдірілген көмекті қажет ететіндерді анықтауға назар аударылады. Бұл зерттеу шабуылдар, кәлік апаттары, оқ жарақаттары және басқа да осыған ұқсас жағдайлар сияқты адам әрекеттерінен туындаған оқиғаларға қатысты сот-медициналық істерге бағытталған. Төтенше жағдайлар бөлімінің медицина мамандары диагноз қоюға және медициналық араласуды қамтамасыз етуге ғана емес, сонымен бірге оқиғаның сот-медициналық іс ретінде жарамдылығын бағалауға және бұл туралы заңды органдарға хабарлауға міндетті.

Материалдар мен әдістер: Зерттеу Башкент университетінің жедел медициналық көмек клиникасында, Анкара, Түркия, этикалық мақұлдаумен жүргізілді. Деректер 2023 жылдың 1 ақпанынан 2023 жылдың 30 наурызына дейін жиналды және демографиялық ақпаратты, қатар жүретін ауруларды, зертханалық нәтижелерді, визуалды зерттеулерді, ауруханаға жатқызу мәліметтерін, кеңес жазбаларын, сырқаттанушылық пен өлім статистикасын қамтиды. Статистикалық талдаулар SPSS 25.0 нұсқасының көмегімен орындалды.

Нәтижелер: Зерттеуге орташа жасы 46,32 жас 221 пациент қатысты, оның 55,2% әйелдер. Жедел жәрдемге жүгінудің ең көп тараған себебі – жер сілкінісі кезіндегі жарақаттар (45,25%), одан кейін өндірістегі жазатайым оқиғалар (13,12%), құлау (11,76%), жарақаттану (8,6%) және күйік (7,69%) болды. Пациенттердің көпшілігі (74,66%) күндізгі уақытта медициналық көмекке жүгінген. Консультация 43,44% жағдайда, негізінен ортопедия бойынша (17,64%) алынды. Науқастардың 7,69%-ы ауруханаға жатқызылды, орташа болу ұзақтығы 17,13 күн. Басқа себептермен салыстырғанда жер сілкінісімен байланысты жағдайлар (76,47%) арасында өлім көрсеткіші жоғары болды.

Зерттеу күндізгі уақытта сот-медициналық жарақаттардың басымдылығын анықтады, ал ауыр жарақаттар түнде болады. Айта кету керек, жағдайлардың айтарлықтай бөлігі жер сілкінісімен байланысты оқиғалар болды, мүмкін жақында болған ірі жер сілкінісі әсер етті. Зерттеу сонымен қатар ортопедиялық және хирургиялық консультациялардың жиі кездеседі, мүмкін, бұл қаланың өнеркәсіптік сипатына байланысты. Өлім деңгейі жер сілкінісімен байланысты оқиғалар арасында ең жоғары болды, бұл апатқа дайындықтың маңыздылығын көрсетеді.

Қорытынды: Бұл зерттеу жедел жәрдем бөлімшелеріндегі сот-медициналық заңдылықтарды аша түседі, күндізгі уақытта және түнде қабылдау кезінде жиі кездесетін жағдайлар жиі ауыр жарақаттарды көрсетеді. Жер сілкінісінен болатын өлім-жітім деңгейінің жоғары болуы, зілзаладан болатын оқиғаларға дайын болу қажеттілігін көрсетеді.

Түйін сөздер: сот-медициналық істер, жер сілкінісінен зардап шеккендер.

Bibliographic citation:

Muratoglu M. Evaluation of forensic cases presented to the emergency medicine clinic between February 1, 2023, and March 30, 2023 // *Nauka i Zdravookhranenie* [Science & Healthcare]. 2023, (Vol.25) 4, pp. 153-157. doi 10.34689/SH.2023.25.4.019

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Introduction

Assault, traffic accidents, injuries caused by firearms and explosive materials, all cases arising from human actions or the nature of one's job responsibilities are considered forensic cases [5, 7]. In the emergency department, some cases may raise suspicions of personal responsibility due to the nature of the factor causing harm to the patient or others [5]. Physicians working in the emergency department not only have the responsibility to examine and provide necessary medical interventions to patients but also have the obligation to assess whether the case has forensic implications and, if so, report it to the relevant authorities [8]. Forensic cases, by definition, are victims of violence that require intervention from both the justice and healthcare systems. Therefore, trauma cases presenting to the emergency department should be treated with consideration of the potential for forensic implications until proven otherwise [9]. Crime victims entering the emergency department may have evidence on their bodies and clothing that could be used in investigations [6]. Failure to take these findings into account during treatment can hinder forensic investigations and restrict the patient's access to justice [2]. Reporting of forensic cases to the relevant authorities for investigation purposes is mandatory. Failure to report or delays in reporting can disrupt the legal process, and responsible healthcare personnel may be penalized [1]. In the chaotic environment of the emergency department, saving lives, providing treatment, and quickly discharging new patients tend to take precedence over identifying forensic cases and collecting evidence [4]. Furthermore, McBrearty points out that patients may be so focused on their injuries that they may not be aware of the victimization; in such cases, it is the responsibility of the physician [3]. Forensic cases require a multi-disciplinary approach with significant depth.

Methods

In our study, after obtaining approval from the Ethics Committee of our faculty, cases referred to the Emergency Department of Baškent University Emergency Medicine Clinic as forensic cases between February 1, 2023, and March 30, 2023, were evaluated. The demographic characteristics of the patients at the time of admission, comorbidities, laboratory results, imaging methods, length of hospitalization if admitted, epicrises of the department of admission, need for noninvasive/invasive mechanical ventilation, morbidity and mortality data, and file notes kept in the emergency department were retrospectively examined through the hospital information management system. Statistical Analysis Statistical analyses were performed using SPSS version 25.0. The normal distribution of variables was examined using the Shapiro-Wilk test. Descriptive analyses included mean, standard deviation, median, minimum, and maximum values. Non-normally distributed (nonparametric) variables

were evaluated using the Mann-Whitney U Test for comparisons between two groups and the Kruskal-Wallis Test for comparisons between more than two groups. Categorical variables were presented using frequency and percentage values. Relationships between categorical variables were examined using the Fisher-Freeman-Halton Exact Test. Cases where the p-value was less than 0.05 were considered statistically significant.

Results

A total of 221 patients were included in the study. The mean age of the patients was 46.32±18.70 years, with 55.2% being female (Table 1).

Table 1. Reason and time of application of patients.

	n	%
Age	46,32±18,70	43 (18-88)
Gender	Female	122 (55,20)
	Male	99 (44,80)
Cause of Complaints	Work Accident	29 (13,12)
	Burns	17 (7,69)
	Injury with a Piercing Cutting Tools	3 (1,36)
	Vehicle Accidents	19 (8,60)
	Fall- Syncope	26 (11,76)
	Sexual Assault	-
	Assault	11 (4,98)
	Suicide	1 (,45)
	Poisonings	7 (3,17)
	Earthquake victims	100 (45,25)
	Other	8 (3,62)
Admission time	08:00-20:00	165 (74,66)
	20:00-08:00	56 (25,34)
GCS	14,9±1,05	15 (4-15)
Consultation	Yes	96 (43,44)
	No	125 (56,56)
Hospitalization	Yes	17 (7,69)
	No	204 (92,31)
Number of days if there is hospitalization	17,13±18,24	8,5 (1-63)
Exitus	Yes	4 (1,81)
	No	217 (98,19)

The most common reason for patient admission was being earthquake victims (45.25%). The next most common reasons for admission were work-related accidents (13.12%), falls (11.76%), assault (8.6%), and burns (7.69%) (Table 1). Most patients (74.66%) sought medical attention during daytime hours (Table 1). The average Glasgow Coma Scale (GCS) score was 14.9±1.05, with 43.44% of patients requiring consultation. The majority of patients who received consultations were from the orthopedic department (17.64%) (Table 3). Other common consultation departments included general surgery (2.26%), plastic surgery (2.26%), thoracic

surgery (1.8%), and neurosurgery (1.8%). Among the patients, 7.69% were admitted to the hospital, with an average length of stay of 17.13±18.24 days (Table 2).

Table 2. Distribution of hospitalization departments.

Department if there is hospitalization	n	%
No	204	(92,31)
Infectious Diseases	2	(0,90)
General Surgery	2	(0,90)
Thoracic Surgery	1	(0,45)
Pulmonary Diseases	1	(0,45)
Pulmonary Diseases, Cardiology	1	(0,45)
Nephrology	1	(0,45)
Neurosurgery	1	(0,45)
Orthopedics	5	(2,26)
Plastic Surgery	1	(0,45)
Psychiatry	1	(0,45)
Wound Unity	1	(0,45)

Table 3. Distribution of consulted departments.

Consultation Department	n	%
No	125	(56,11)
Forensics	2	(0,90)
Anesthesia	2	(0,90)
Anesthesia, Thoracic Surgery, Pulmonary Diseases	1	(0,45)
Internal medicine	1	(0,45)
Infectious Diseases	3	(1,36)
Infection, Orthopedics, Plastic Surgery	1	(0,45)
General Surgery	5	(2,26)
General Surgery, Orthopedics	1	(,45)
Internal Medicine	2	(0,90)
Thoracic Surgery	4	(1,80)
Thoracic Surgery, Anesthesia	1	(0,45)
Pulmonary Diseases, Cardiology	1	(0,45)
Eye Diseases	2	(0,90)
Obstetrics and Gynecology	1	(0,45)
Cardiology	2	(0,90)
ENT	2	(0,90)
Nephrology	3	(1,36)
Neurology	3	(1,36)
Neurosurgery	4	(1,80)
Neurosurgery, Internal Medicine	1	(0,45)
Neurosurgery, ENT, General Surgery	1	(0,45)
Orthopedics	38	(17,64)
Orthopedics, Internal Medicine	1	(0,45)
Orthopedics, Cardiology	1	(0,45)
Ortopedi, ENT	1	(0,45)
Orthopedics, Plastic Surgery	3	(1,36)
Plastic Surgery	5	(2,26)
Psychiatry	2	(0,90)
Psychiatry, Plastic Surgery	1	(0,45)
Wound Unity	1	(0,45)

Of the admitted patients, 5 were in the orthopedic department, 2 in the infectious diseases department, and 2 in the general surgery department. There was no significant difference in the presenting complaints of patients based on gender ($p>0.05$) (Table 4). The rates of admissions due to assault (2.42%) and poisoning (1.82%) were significantly lower among patients admitted during the night hours (20:00-08:00) compared to those admitted during the daytime (08:00-20:00) ($p<0.05$) (Table 5). However, earthquake victims had a significantly higher admission rate during daytime hours compared to nighttime ($p<0.05$).

Table 4. Distribution of Complaints by Gender.

		Gender				P
		Female		Male		
		n	%	n	%	
Cause of Complaints	Work accident	14	(11,48)	15	(15,15)	0,293
	Burns	7	(5,74)	10	(10,10)	
	Injury with a Piercing Cutting Tools	1	(,82)	2	(2,02)	
	Vehicle Accidents	11	(9,02)	8	(8,08)	
	fall-syncope	17	(13,93)	9	(9,09)	
	Sexual Assault	-	-	-	-	
	Assault	7	(5,74)	4	(4,04)	
	Suicide	1	(,82)	-	-	
	Poisonings	2	(1,64)	5	(5,05)	
	Earthquake Victims	60	(49,18)	40	(40,40)	
	Other	2	(1,64)	6	(6,06)	

Exact Chi-Square Test.

Table 5. Distribution of Complaints by Time.

		Admission time				p		
		08:00-20:00		20:00-08:00				
		n	%	n	%			
Cause of Complaints	Work accident	23	(13,94)	6	(10,71)	0,028		
	Burns	13	(7,88)	4	(7,14)			
	Injury with a Piercing Cutting Tools	2	(1,21)	1	(1,79)			
	Vehicle Accidents	12	(7,27)	7	(12,50)			
	fall-syncope	20	(12,12)	6	(10,71)			
	Sexual Assault	-	-	-	-			
	Assault	4	(2,42)	7	(12,50)			
	Suicide	1	(,61)	-	-			
	Poisonings	3	(1,82)	4	(7,14)			
	Earthquake Victims	82	(49,70)	18	(32,14)			
	Other	5	(3,03)	3	(5,36)			
	Hospitalization	Yes	8	(4,85)	9		(16,07)	0,016
		No	157	(95,15)	47		(83,93)	

Exact Chi-Square Test.

Patients who were admitted had a higher proportion of admissions during the nighttime (20:00-08:00) ($p=0.016$). While there was no significant difference in the reasons for admission between patients who were admitted and those who were not, earthquake victims had a higher rate of admission (76.47%) (Table 6).

Patients who received consultations had a higher rate of hospitalization (16.67%) compared to those who did not receive consultations (0.80%) ($p<0.001$). There was no significant relationship between the reason for consultation and the reasons for admission (Table 7).

Although there was no significant relationship between mortality and the reason for admission, falls or syncope and other admission reasons were more frequent among deceased patients (Table 8). Patients with work-related accidents had a higher proportion of males, but this difference did not create a significant correlation ($p>0.05$).

Table 6. Distribution of Complaints by Hospitalization.

		Hospitalization				p
		Yes		No		
		n	%	n	%	
Cause of Complaints	Work accident	-	-	29	(14,22)	0,355
	Burns	2	(11,76)	15	(7,35)	
	Injury with a Piercing Cutting Tools	-	-	3	(1,47)	
	Vehicle Accidents	-	-	19	(9,31)	
	fall-syncope	2	(11,76)	24	(11,76)	
	Sexual Assault	-	-	-	-	
	Assault	-	-	11	(5,39)	
	Suicide	-	-	1	(,49)	
	Poisonings	-	-	7	(3,43)	
	Earthquake Victims	13	(76,47)	87	(42,65)	
	Other	-	-	8	(3,92)	

Exact Chi-Square Test

Table 7. Distribution of Complaints by Consultation.

		Consultation				p
		Yes		No		
		n	%	n	%	
Hospitalization	Yes	16	(16,67)	1	(,80)	< 0,001
	No	80	(83,33)	124	(99,20)	
Cause of Complaints	Work accident	9	(9,38)	20	(16,00)	0,090
	Burns	5	(5,21)	12	(9,60)	
	Injury with a Piercing Cutting Tools	2	(2,08)	1	(,80)	
	Vehicle Accidents	12	(12,50)	7	(5,60)	
	fall-syncope	16	(16,67)	10	(8,00)	
	Sexual Assault	-	-	-	-	
	Assault	3	(3,13)	8	(6,40)	
	Suicide	1	(1,04)	-	-	
	Poisonings	3	(3,13)	4	(3,20)	
	Earthquake Victims	40	(41,67)	60	(48,00)	
	Other	5	(5,21)	3	(2,40)	

Exact Chi-Square Test

Patients who sought medical attention during daytime hours had similar reasons for work-related accidents as those who sought attention during nighttime hours. The number of consultations had a significant relationship with mortality; those with consultations had a significantly higher mortality rate ($p < 0.001$) (Table 9).

Discussion

In our study, most forensic cases admitted to the emergency department were earthquake victims. The second most common cause of admission was work-related accidents. There was a significant relationship between the

reason for admission and the time of admission, with earthquake victims more frequently admitted during daytime hours, and assault and poisoning cases more frequently admitted during nighttime hours. The majority of patients requiring consultation were referred to the orthopedic department. Patients who received consultations had a significantly higher rate of hospitalization. Mortality was significantly higher among patients who received consultations

Conclusion Forensic cases, who are also victims of violence, require a multidisciplinary approach and comprehensive evaluation. Emergency physicians should be aware of the potential forensic implications of trauma cases and take appropriate steps to preserve evidence and report cases to the relevant authorities. This study highlights the importance of considering forensic aspects in emergency medicine and emphasizes the need for collaboration between healthcare and legal systems in managing forensic cases.

Funding: There was no grant funding.

Publication details: This material has not been published in other publications and is not pending review by other publishers.

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