ODU TIP DERGİSİ/ODU MEDICAL JOURNAL (ODU MED J)

August 2024;11(2):78-90

ARAŞTIRMA MAKALESİ/ RESEARCH ARTICLE

DOI: 10.56941/odutip.1512185

Analysis of Acute Abdomen in Trauma Patients: Mortality Factors and Impact of the COVID-19 Pandemic on Admissions

Mustafa Alpaslan[1], Sultan Ozselcuk[1]

[1] Nevsehir State Hospital, Clinic of Emergency Medicine, Nevsehir, Turkiye

Received: 08 July 2024, Accepted: 26 August 2024, Published online: 31 August 2024

Abstract

Objective: To analyze the patients who developed acute abdomen due to trauma, to evaluate the factors affecting mortality and to examine the impact of the COVID-19 pandemic process on patient admissions.

Method: The study was conducted retrospectively by analyzing the patients who applied to the emergency department of a secondary healthcare institution between 01.01.2019-31.12.2023 (5 years) and developed an emergency surgical abdomen secondary to trauma and were hospitalized and treated. All age groups were included in the study. Demographic data, type of trauma, type of treatment, site of injury, laboratory data, length of hospitalization and mortality status were analyzed. Comparative analysis of the injured regions according to the type of trauma was performed. Data of patients who were discharged and those who died were compared. Data collection was performed through hospital electronic data.

Results: The study evaluated 123 patients. The majority of patients were male (%78.9). The mean age was 36.43±14.81 years and the most common age range was 21-40 years (60.2%). At the time of presentation to the emergency department, the most common Glasgow Coma Score was 11-15 (83%). The most common reason for presentation was traffic accident (40.7%). Post-traumatic injuries to more than one organ or region in the abdomen were most common (28.5%). Surgical procedures were performed in 65.9% of the patients. The mean duration of hospitalization was 7.14±5.40 days. Hemoglobin and platelet levels were found to be significantly lower at the time of admission in the patients who died ($p<0.05$). Mortality rate was 9.8%.

Conclusion: In patients with abdominal trauma, the type of injury, Glasgow Coma Score at admission and laboratory data are effective in predicting mortality. It should be kept in mind that especially in patients with blunt trauma and in cases of multiple trauma, intra-abdominal injuries may progress more insidiously and may be missed.

Key Words: Emergency Department, Blunt abdominal trauma, Penetrating abdominal trauma, Mortality

Travma Hastalarında Akut Batın analizi: Mortalite Faktörleri ve COVID-19 Pandemisinin Yatışlar Üzerindeki Etkisi

Özet

Amaç: Travmaya bağlı akut batın gelişen hastaların analizi ile mortaliteyi etkileyen faktörlerin değerlendirilmesi ile COVID-19 pandemi sürecinin hasta başvurularına etkisini incelemektir.

Yöntem: Çalışma retrospektif olarak 01.01.2019-31.12.2023 (5 yıl) tarihleri arasında ikinci basamak bir sağlık kuruluşunun acil servisine başvuran ve travmaya sekonder acil cerrahi batın gelişen, yatırılarak tedavi altına alınan hastaların analizi ile yapıldı. Çalışmaya tüm yaş grupları dâhil edildi. Hastalarda demografik veriler, travma tipi, tedavi tipi, yaralanan bölge, laboratuar verileri, hastanede yatış süresi ve mortalite durumu analiz edildi. Travma tipine göre yaralanan bölgelerin karşılaştırmalı analizi yapıldı. Taburcu olan ve ölümle sonlanan hastaların verileri karşılaştırıldı. Veri toplama işlemleri ise hastane elektronik verileri üzerinden yapıldı.

Bulgular: Çalışmada 123 hasta değerlendirildi. Hastaların %78,9'u erkekti. Yaş ortalaması 36,43±14,81 olup en sık hasta yatışı 21-40 yaş aralığındaydı (%60,2). Acil servise başvuru anında Glaskow Koma Skoru en sık 11-15 (%83) aralığında oldu. En fazla trafik kazası nedeniyle başvuru olduğu görüldü (%40,7). Travma sonrası en fazla batın içinde birden fazla organ ya da bölgede yaralanma olduğu görüldü (%28,5). Hastaların %65,9'una cerrahi işlem uygulandı. Hastanede ortalama yatış süresi 7,14±5,40 gün oldu. Eksitus olan vakalarda başvuru anında hemoglobin düzeyi ve trombosit düzeyinin anlamlı derecede düşük olduğu görüldü ($p<0,05$). Mortalite oranı %9,8'di.

Sonuç: Karın travmalı hastalarda yaralanmanın tipi, başvuru anında gözlenen Glaskow Koma Skoru ve laboratuar verileri mortaliteyi öngörmede etkili olmaktadır. Özellikle künt travmalı hastalarda ve multi travmalı vakalarda karın içinde meydana gelen yaralanmanın daha sinsi şekilde ilerleyebileceği ve atlanabileceği unutulmamalıdır.

Anahtar kelimeler: Acil Servis, Künt abdominal travma, Penetran abdominal travma, Mortalite

Suggested Citation: Alpaslan M, Ozselcuk S. Analysis of Acute Abdomen in Trauma Patients: Mortality Factors and Impact of the COVID-19 Pandemic on Admissions. ODU Med J, 2024;11(2): 78-90.

Address for correspondence/reprints:

Mustafa ALPASLAN

Telephone number: +90 (507) 148 38 94

E-mail: mustafalpaslan@gmail.com

INTRODUCTION

Head, neck, thorax and abdominal injuries are the leading causes of trauma-related deaths, respectively. Deaths due to abdominal injuries constitute approximately 15-20% of trauma-related deaths (1-5). Although abdominal trauma is less lethal than head and chest trauma, it remains important because it is the trauma group with the highest rate of preventable deaths when early diagnosis and treatment is performed (1-3). Early deaths in abdominal trauma are usually due to massive hemorrhage. Late mortality and morbidity are due to infection and sepsis (1-3).

Injuries are caused by direct or motion effect of trauma, compressive effect, stretching and tearing effect. Hemorrhage in solid organs, internal perforation, hemorrhage and peritoneal contamination may develop (6). It has been reported that solid organ injuries are more predominant in blunt traumas while hollow organs are more commonly injured in penetrating injuries (1-3,5,6). Retroperitoneal injuries are usually asymptomatic at the beginning and may present late (6).

The two main causes of abdominal injuries are blunt trauma and penetrating injuries. Although blunt abdominal traumas usually present as multiple injuries, the most common causes are falling from a height, assault, occupational accidents and motor vehicle accidents (1-3). The most commonly injured solid organs in blunt abdominal trauma are the spleen and liver. Since they usually occur in multiple injuries, awareness may occur later in the diagnosis and treatment process compared to penetrating injuries (5).

The two most common causes of penetrating injuries are penetrating and cutting instrument injury (PCII) and firearm injury (FI). While the probability of injury in the intra-abdominal organs is 90-98% in gunshot wounds, this rate is 55-60% in FI (1-3,5). The mortality rate in penetrating abdominal trauma is around 2-13% (7).

COVID-19 disease has spread from Asia to Europe and America in a short period of time and the World Health Organization (WHO) declared a "Pandemic" on March 11, 2020 (8). In the literature, it has been reported that the epidemiologic distribution of forensic cases differs in the presence of situations such as disasters and pandemics (9).

Emergency departments are usually the first port of call for trauma and forensic cases. Patient management is very difficult especially in PCII and FI. Early diagnosis and treatment is very important in patients with acute abdomen due to trauma. In this study, we aimed to analyze the patients who developed acute abdomen due to trauma, to evaluate the factors affecting mortality and to evaluate the effect of the COVID-19 pandemic process on such patient admissions to the emergency department.

METHODS

This retrospective study was conducted in a health institution providing secondary health care services. The time interval determined in the study was between 01.01.2019-31.12.2023 (5 years) and was performed by analyzing the patients with traumatic acute abdominal condition who were hospitalized from the emergency department to the general surgery, urology and gynecology and obstetrics clinics during this period. All age groups were included in the study. Demographic data (age, gender), type of trauma (traffic accident, PCII, FI, etc.), type of treatment (conservative, surgical, blood product replacement, etc.), site of injury (liver, spleen, small intestine, etc.), laboratory data (hemogram and biochemical parameters), 'Glasgow Coma Score' (GCS) on arrival, length of hospitalization and mortality status were analyzed. The impact of the COVID-19 pandemic on the number of cases in the specified time interval and the cases seen in this process were analyzed. Comparative analysis of the injured areas according to the type of trauma was performed. Data of patients who were discharged and those who died were compared. Data collection was done retrospectively through hospital electronic data. The data obtained were entered into the study form.

RESULTS

In this study, the number of patients who developed acute abdomen due to trauma and were hospitalized and followed up was 123. 78.9% of the patients were male. The mean age was 36.43±14.81 years and the most common age range was 21-40 years (60.2%). The proportion of patients evaluated as forensic cases was 90.2%. At the time of presentation to the emergency department, the most common GCS was in the range of 11-15 (83%). Surgical procedures were performed in 65.9% of the patients. The proportion of patients initially admitted to intensive care unit was 69.9%. The mean duration of hospitalization was 7.14±5.40 days. The majority of the patients were hospitalized for 1-7 days (64.2%). Of the patients analyzed in the study, 90.2% were discharged and 9.8% died. General data of the patients are given in Table 1.

When the distribution of patient hospitalizations by year is analyzed, the highest number of hospitalizations was in 2023 (35.7%) (Figure 1). According to the distribution given in Figure 1, patient hospitalizations showed a significant decrease after 2019 and then increased again in 2023.

Table 1. General data

		n(%)
Gender	Male	97 (78.9)
	Female	26 (21.1)
Average age		36.43±14.81
Age range	0-20	8 (6.5)
	21-40	74 (60.2)
	41-60	34(27.6)
	61-80	4 (3.3)
	81-100	3 (2.4)
Forensic Case		111 (90.2)
Glasgow Coma Score*	1-5	19 (15.4)
	6-10	2 (1.6)
	11-15	102 (83.0)
Treatment	Conservative	42 (34.1)
	Surgery	81 (65.9)
Blood Products Replacement**		
Erythrocyte (Units)	1-3	20 (16.3)
	4-6	8 (6.5)
	7-10	2 (1.6)
Fresh Frozen Plasma (Unit)	1-3	16 (13.0)
	4-6	3 (2.4)
Hospitalization	Service	37 (30.1)
	Intensive care	86 (69.9)
Length of Stay (days/ average)		7.14±5.40
Length of Hospitalization (days)	1-7	79 (64.2)
	8-15	34 (27.6)
	16-23	7 (5.2)
	24-30	3 (2.4)
Result	Discharged	111 (90.2)
	Excitus	12 (9.8)

*The value evaluated at the time of the patient's admission to the emergency department
**Number of blood products received by the patient in the emergency department and during the entire hospitalization period. Patient ratios were evaluated according to the number of all patients.

Analysis of the mechanisms of trauma revealed that traffic accidents (TA) were the most common cause of acute abdomen (40.2%). When we analyzed the regions injured after trauma, it was observed that most of the injuries occurred in more than one organ or region in the abdomen (28.5%). Spleen (21.1%) and liver (17.9%) were the most commonly injured organs. There was no

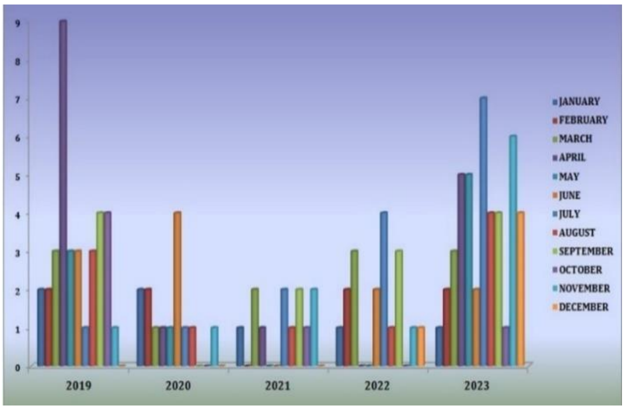

Figure 1. Distribution of the number of cases by year and month

significant difference in the type of trauma according to the year of presentation (p=0.286).There was also no significant difference between the regions of injury according to the years of presentation (p=0.364) (Table 2). There were significant differences when the injured areas were compared according to the trauma types (p=0.000) (Table 3).

The results of the comparison according to mortality status are given in Table 4. Accordingly, GCS was found to be significantly lower at the time of admission in patients with excitus (p=0.000). In laboratory data, blood glucose level and white blood cell level at admission were significantly higher in patients with excitus ($p<0.05$). Hemoglobin level and platelet level were found to be significantly low at the time of admission in patients with excitus ($p<0.05$). Blood product replacement was significantly higher in patients with excitus ($p<0.05$). When the length of hospitalization was analyzed, patients with excitus stayed in the hospital for a shorter time than those who were discharged (p<0.05). In Table 5, mortality status was compared according to trauma types and injured regions and it was seen that deaths due to TA were significantly higher (p=0.005). In the comparison made according to the injured regions, it was observed that patients with injuries in more than one organ or region were more fatal (p=0.032).

Table 2. Comparison of trauma type and injured areas by years

Trauma Type / Year, n(%)	2019	2020	2021	2022	2023	Total	p
Traffic Accident	17 (48.6)	3 (21.4)	6 (50)	5 (27.8)	19 (43.2)	**50 (40.7)**	0.286 (χ^2: 18.664)
Penetrating and Cutting Instrument Injury	10 (28.6)	4 (28.6)	3 (25)	9 (50)	15 (34.1)	**41 (33.3)**	
Firearm Injury	4 (11.4)	2 (14.3)	2 (16.7)	3 (16.7)	4 (9.1)	**15 (12.2)**	
Falling	1 (2.9)	4 (28.6)	1 (8.3)	1 (5.6)	2 (4.5)	**9 (7.3)**	
Blunt Impact	3 (8.6)	1 (7.1)	0 (0)	0 (0)	4 (9.1)	**8 (6.5)**	
Injured Organ / Region							0.364 (χ^2: 46.651)
Multiple Organs or Regions	10 (28.6)	3 (21.4)	5 (41.7)	6 (33.3)	11 (25)	**35 (28.5)**	
Spleen	11 (31.4)	3 (21.4)	2 (16.7)	3 (16.7)	7 (15.9)	**26 (21.1)**	
Liver	3 (8.6)	1 (7.1)	3 (25)	2 (11.1)	13 (29.5)	**22 (17.9)**	
Anterior Abdominal Wall	3 (8.6)	4 (28.6)	1 (8.3)	4 (22.2)	0 (0)	**12 (9.8)**	
Small intestine	3 (8.6)	2 (14.3)	0 (0)	1 (5.6)	4 (9.1)	**10 (8.1)**	
Retroperitoneum	0 (0)	0 (0)	1 (8.3)	1 (5.6)	4 (9.1)	**6 (4.9)**	
Mesentery	3 (8.6)	0 (0)	0 (0)	0 (0)	2 (4.5)	**5 (4.1)**	
Column	1 (2.9)	1 (7.1)	0 (0)	0(0)	1 (2.3)	**3 (2.4)**	
Pancreas	1 (2.9)	0 (0)	0 (0)	0 (0)	0 (0)	**1 (0.8)**	
Gallbladder	0 (0)	0 (0)	0 (0)	1 (5.6)	0 (0)	**1 (0.8)**	
Stomach	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.3)	**1 (0.8)**	
Rectum	0 (0)	0 (0)	0 (0)	0 (0)	1 (2.3)	**1 (0.8)**	
Total	**35 (100)**	**14 (100)**	**12 (100)**	**18 (100)**	**44 (100)**	**123 (100)**	

χ^2:Chi-square test analysis was used to compare two different groups and p<0.05 was accepted as significant.

Table 3. Comparison of injured areas with trauma type

Injured Area / Trauma Type, n(%)	Traffic Accident	PCII*	FI*	Fall	Blunt Trauma	Total	p
Multiple Organs or Regions	14 (40)	9 (25.7)	9 (25.7)	2 (5.7)	1 (2.9)	**35 (100.0)**	**0.003** (χ^2:74.240)
Spleen	16 (61.5)	3 (11.5)	1 (3.8)	4 (15.4)	2 (7.7)	**26 (100.0)**	
Liver	14 (63.6)	3 (13.6)	1 (4.5)	1 (4.5)	3 (13.6)	**22 (100.0)**	
Anterior Abdominal Wall	2 (16.7)	9 (75)	1 (8.3)	0 (0)	0 (0)	**12 (100.0)**	
Small Intestine	2 (20)	6 (60)	2 (20)	0 (0)	0 (0)	**10 (100.0)**	
Retroperitoneum	1 (16.7)	4 (66.7)	0 (0)	0 (0)	0 (0)	**5 (100.0)**	
Mesentery	0 (0)	2 (40)	1 (20)	1 (20)	1 (20)	**5 (100.0)**	
Column	0 (0)	3 (100)	0 (0)	0 (0)	0 (0)	**3 (100.0)**	
Pancreas	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	**1 (100.0)**	
Gallbladder	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	**1 (100.0)**	
Stomach	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	**1 (100.0)**	
Rectum	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)	**1 (100.0)**	
Total	**50 (40.7)**	**41 (33.3)**	**15 (12.2)**	**9 (7.3)**	**8 (6.5)**	**123 (100.0)**	

*PCII: Penetrating and Cutting Instrument Injury, FI: Firearm Injury
χ^2:Chi-square test analysis was used to compare two different groups and p<0.05 was accepted as significant.

Table 4. Comparison of Clinical Characteristics and Laboratory Data Between Discharged and Deceased Trauma Patients

		Discharge, n(%)/mean±SD	Excitus, n(%)/mean±SD	p*
Age		35.98±14.21	40.5±19.87	0.309
Gender	Male	90 (92.8)	7 (7.2)	0.067
	Female	21 (80.8)	5 (19.2)	
Glasgow Coma Score		13.79±3.37	5±4.67	**0.000**
Laboratory Data**				
Glucose (mg/dL)		107-154	137.7-239.2	**0.003**
Urea (mg/dL)		24-37	24.2-41	0.772
Creatinine (mg/dL)		0,7-1,06	0.7-0.97	0.937
Total Bilurubin (mg/dL)		0,3-0,6	0.1-0.47	0.088
Direct Bilurubin (mg/dL)		0,1-0,2	0.1-0.15	0.281
AST (U/L)		22-82	69-335	0.051
ALT (U/L)		18-64	25-293	0.137
GGT (U/L)		13-34	9.5-23.2	0.382
LDH (U/L)		285-602	288.2-813.2	0.197
CRP (mg/L)		1-3	0.9-2	0.451
White Blood Cell ($10^3/mm^3$)		7-12	8.2-16.8	**0.028**
Hemoglobin (g/dL)		12,6-15	7.0-11.9	**0.000**
Platelet ($10^3/mm^3$)		233-330	129.5-239.5	**0.040**
Neutrophils / Lymphocytes (%)		1,3-5	2.4-8.9	0.250
Blood Product Replacement (units)***				
Erythrocyte		0.57±1.45	3.08±3.02	**0.000**
Fresh frozen plasma		0.21±0.73	1.41±1.83	**0.000**
Length of Hospitalization (days)		7.49±5.39	3.91±4.56	**0.029**

*Student t test analysis was performed in the comparison between the two groups and p<0.05 was accepted as significant.
**Values seen at the time the patient presented to the emergency department. Laboratory data are given as 25th and 75th percentile values.
***The number of blood products given to the patient during the treatment process in the emergency department and the hospitalized clinic.

Table 5. Comparison of discharged and deceased patients according to trauma type and injury site

Trauma Type	Discharge, n(%)	Excitus, n(%)	p
Traffic Accident	39 (78.0)	11 (22.0)	**0.005** (χ^2:14.947)
Penetrating and Cutting Instrument Injury	41 (100.0)	0 (0.0)	
Firearm Injury	14 (93.3)	1 (6.7)	
Falling	9 (100.0)	0 (0.0)	
Blunt Impact	8 (100.0)	0 (0.0)	
Injured Organ / Region			
Multiple Organs or Regions	27 (77.1)	8 (22.9)	**0.032** (χ^2:21.094)
Spleen	24 (92.3)	2 (7.7)	
Liver	21 (95.5)	1 (4.5)	
Anterior Abdominal Wall	12 (100.0)	0 (0.0)	
Small Intestine	10 (100.0)	0 (0.0)	
Retroperitoneum	6 (100.0)	0 (0.0)	
Mesentery	5 (100.0)	0 (0.0)	
Column	3 (100.0)	0 (0.0)	
Pancreas	0 (0.0)	1 (100.0)	
Gallbladder	1 (100.0)	0 (0.0)	
Stomach	1 (100.0)	0 (0.0)	
Rectum	1 (100.0)	0 (0.0)	
Total	111 (90.2)	12 (9.8)	

χ^2:Chi-square test analysis was used to compare two different groups and p<0.05 was accepted as significant.

DISCUSSION

The abdomen is known to be the third most frequently injured region after the head and extremities in trauma-related injuries. Traumas in the abdomen are usually secondary to blunt trauma (1-3). The most common blunt traumas are injuries caused by TA. It has been reported that penetrating traumas are most commonly caused by FI and PCII (1-3,5). In our study, it was observed that TA injuries were the most common (40.7%). In our study, the second most common injuries were caused by PCII (33.3%), followed by FI (12.2%). Similarly, Acar et al. reported that the most common cause of abdominal trauma was due to TA with a rate of 80.3% (10). In the same study, it was observed that the second most common cause of abdominal trauma was injuries due to PCII (4.8%) (10). In similar studies conducted in the literature, Tekesin et al. 138.352 trauma patients and reported that 55% had blunt abdominal trauma and 10.1% had penetrating abdominal injury (11). In the study by Ozpek et al. the most common causes of blunt abdominal trauma were motor vehicle accidents (62%) and falling from height (27%) (12). In studies on abdominal traumas in children, it was reported that the most common type of trauma was falling from a height (13,14).

In the literature, it has been reported that the most commonly injured intra-abdominal organs in blunt abdominal trauma are liver, spleen and kidney, respectively (15-17). In our study, the most common injury occurred after TA and when evaluated together with isolated blunt trauma, the most common injuries were observed in the liver and spleen (Table 3). In the study by Acar et al. liver injury (55.8%), spleen injury (41.9%) and kidney injury (18.6%) were the most common injuries (10). In the study by Yasak et al. titled 'Investigation of children with solid organ injury after blunt abdominal trauma', the most commonly injured solid organs were liver (44.5%), spleen (34.2%) and kidney (10%), respectively (14). It has been reported that the injury rate of intestinal organs is higher in penetrating abdominal trauma. It has been reported that the most commonly injured solid organ is the spleen followed by the liver (2,19). In our study, the small intestine was the most commonly injured organ as a result of penetrating injury. The most commonly injured solid organs in penetrating injuries were liver and spleen in equal proportions (Table 3). In a study by Kurt et al. on penetrating sharps injuries to the abdomen, it was reported that the most common organ repaired by surgeons was the small intestine (19). In the study by Acar et al. intestinal organ perforation due to penetrating injuries was observed more frequently (10). In a study by Saylam et al. on injuries seen after FI in terrorist attacks, it was reported that the most commonly injured organ in the abdomen was the small intestine (20).

In studies conducted in our country on abdominal injuries, it was reported that males were exposed to trauma at a higher rate than females (10-14, 19, 20). In our study, the rate of male patients was significantly higher than that of females (78.9%). In our study, we observed that the most common age range was 21-40 years and the mean age was 36.43±14.81. Similarly, in a study on risk factors affecting mortality in abdominal trauma, the mean age was reported to be 36.08±16.01 (21). In the study conducted by Acar et al. the mean age was reported as 41±18.4 years (10). Our study was similar to the literature in this respect. We think that the higher incidence of such traumas and injuries in the male gender and in the young adult age group is related to the fact that men and young adults are more active in social life and have a higher risk of encountering trauma compared to women and people in other groups.

In our study, we evaluated patient hospitalizations over a five-year period. During this period (2019-2023), the world experienced the COVID-19 pandemic. In this study, when we examined whether the pandemic process had an effect on patient admissions and hospitalizations, we observed that the number of patients decreased with the onset of the pandemic towards the end of 2019 and there was a rapid increase in the number of patients with the end of the pandemic (Figure 1). In the study by Güven et al. on the rates of forensic cases seen in the emergency department during the pandemic period, it was observed that the number of cases decreased rapidly with the onset of the pandemic and the number of cases was higher than before with the end of the pandemic (22). Similarly, in our study, the number of cases increased more than before after the end of the pandemic. In our study and in the study conducted by Güven et al. it was observed that this effect was especially evident in the TA and PCII cases (22). In our country, we think that there was a decrease in trauma cases due to restrictions in people's social lives and curfew practices during the pandemic process, and with the freedom that came with the end of the pandemic and the psychological effects of the process, we think that forensic case rates are higher than before.

Decreases in hemoglobin and hematocrit values in abdominal traumas are indicative of massive bleeding in the abdomen and have an important place in the clinical follow-up of the patient (23). In our study, we found that hemoglobin levels measured at the time of admission were significantly lower in patients with excitus compared with patients who were discharged. We also observed that hemoglobin levels were significantly lower in patients with low GCS at the time of admission (p=0.005). In the study by Acar et al. hemoglobin and hematocrit values were significantly lower in patients with solid organ injury and high trauma score (10). Liver function tests and renal function tests, which are analyzed in routine biochemical parameters in abdominal traumas, may also be instructive about solid organ injuries (23). In the study of Acar et al. serum transaminase values were found to be significantly higher in patients with liver injury (10). In our study, transaminase values were significantly higher in patients with isolated liver injury (p=0.033).

In this study, we examined the effect of laboratory data at the time of admission on mortality and found that there was a decrease in serum hemoglobin and platelet levels and a significant increase in white blood cell, glucose and C-reactive protein (CRP) levels in cases that ended in death (p<0.05). In a similar study conducted by Gönültas et al. serum lactate dehydrogenase (LDH) and aspartate transminotransferase (AST) levels were significantly higher in patients with excitus (23).

We think that GCS evaluated at admission in patients with abdominal trauma is effective in predicting clinical course and mortality. In this study, the GCS value was 13.79±3.37 in patients who were discharged, whereas it was significantly lower in those who were excluded and was 5±4.67. Acar et al. reported that the GCS value was lower in patients with high trauma score (10). In a study in which patients admitted to the emergency department with gunshot wounds were evaluated, it was observed that the GCS of deceased patients was significantly lower (24).

In our study, we found that transfusion of blood products was performed at a significantly higher rate in patients with excitus (Table 4) (p=0.000). Similarly, in a similar study, it was observed that a significantly higher rate of blood product replacement was performed in patients with excitus (21).

Considering the length of hospitalization of the patients, Acar et al. reported that patients with high trauma scores were hospitalized longer (p<0.05) (10). In the study conducted by Gönültas et al. the duration of hospitalization was significantly lower in patients with excitus (21). In our study, the duration of hospitalization was shorter in cases that ended in death (p=0.029).

In recent years, with the development of computed tomography and the increase in intensive care services, conservative follow-up of patients has become more prominent. As a matter of fact, conservative treatment has become more prominent in stable cases in order to avoid surgical complications (25). However, surgical procedure comes to the forefront in penetrating injuries and unstable blunt trauma cases (2,5). In our study, 65.9% of the patients were treated surgically. However, similar to the literature, surgical treatment is predominant in penetrating injuries and conservative treatment in blunt injuries (p=0.000). In one study, the majority (79.1%) of patients with solid organ injuries due to blunt trauma were treated conservatively (10). In a similar study, 70.8% of patients presented with blunt abdominal trauma and the proportion of patients who underwent surgical procedure was 83.2% (21).

Hypovolemic shock, peritonitis, septic shock and multi-organ failure are among the causes of death in patients with abdominal trauma (1,2,5,15). Mortality rates in abdominal trauma have been reported to vary between 12.6% and 21.3% (26-28). The mortality rate in blunt abdominal injuries is higher than penetrating injuries (5). In our study, the mortality rate was 9.8% and 11 patients (91.6%) after TA and one patient (8.4%) after FI were excused. In our study, the mortality rate due to blunt trauma was higher and especially the mortality rate was higher in patients with injuries to more than one organ or region (Table 5). Mortality in penetrating abdominal trauma is due to sudden death at the scene due to blood loss or complications in the late postoperative period and multiorgan failure developing due to trauma (12). In a study by Aldemir et al. 1048 patients with abdominal penetrating trauma were analyzed and mortality rate was reported as 10.1% (29). In patients with abdominal trauma, the mortality rate was 4.7% in the study by Acar et al. (10) and 19.4% in the study by Gönültas et al. (21).

CONCLUSION

In conclusion, in patients with abdominal trauma, the type of injury, GCS at presentation and laboratory data are effective in predicting mortality. It should be kept in mind that especially in patients with blunt trauma and in cases with multitrauma, intra-abdominal injury may progress more insidiously and may be missed. In our study, we found that the most common type of trauma in patients with abdominal trauma who developed acute abdomen was traffic accident. We would like to emphasize that patients with injuries due to traffic accidents, which is one of the most common reasons for admission to emergency departments, should be especially careful in terms of acute abdomen when evaluating patients.

Study Limitations

In the study, all patients who underwent conservative treatment and surgical procedure were evaluated and only patients who were hospitalized from the emergency department were analyzed.

Ethics Committee Approval: Prior to the study, the approval of 'Hacıbektas Veli University Non-Interventional Clinical Research Ethics Committee' numbered 2024/06 and dated 21/03/2024 was obtained.

Author Contributions: Conception - Mustafa Alpaslan, Sultan Ozselcuk; Design - Mustafa Alpaslan, Sultan Ozselcuk; Supervision - Mustafa Alpaslan; Data Collection and/or Processing - Sultan Ozselcuk; Analysis and/or Interpretation - Mustafa Alpaslan; Literature Search - Mustafa Alpaslan; Writing - Mustafa Alpaslan; Critical Review - Mustafa Alpaslan

Conflict of Interest: The authors reported no conflict of interest.

Financial Disclosure: The authors did not declare financial support.

Ethical Statement: The authors declare that they comply with research and publication ethics.

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