

Comparison of Patterns and Outcomes of Patients with Penetrating and Blunt Abdominal Trauma: A Retrospective Study

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ABSTRACT

Background:

Abdominal trauma, including blunt abdominal trauma (BAT) and penetrating abdominal trauma (PAT), leads to various complications in patients. For this reason, this study aimed to compare patterns and outcomes of patients with BAT and PAT.

Materials and Methods:

In this retrospective study, patients who were referred to the emergency room were included. Initially, the researchers designed a researcher-made checklist and entered the patients' information into this checklist. In this study, the records of patients who were admitted to the hospital emergency department as temporary or permanent hospitalizations with a diagnosis of abdominal trauma were included, and information related to the patients' records was extracted. The researchers extracted the patients' information and entered it into SPSS software version 18, and then the data were analyzed.

Results:

In the BAT group, 70.2% of the patients were male, 68.8% were in the 21-40 years age group, 63.5% of the patients were in the Improve health status, 35.1% were hospitalized due to traffic accident, 81.7% had multiple traumas, and 51.9% had Glasgow Coma Scale (GCS) between 3-6. Also, in the PAT group, 78.2% of the patients were male, 82.1% were in the 21-40 years age group, 46.2% of the patients were in the Improve health status, 32.1% were hospitalized due to traffic accident, 92.3% had multiple traumas, and 35.9% had GCS between 3-6. Also, according to the findings, there was a significant difference between the patients of the two groups in terms of time of injury, health status, and multiple traumas.

Conclusion:

Given that the presence of multiple traumas and GCS scores have been associated with patient mortality, it is recommended that these two criteria be examined more carefully when providing clinical care to patients.

Keywords: Trauma, Penetrating trauma, Blunt abdominal trauma, Abdominal injuries

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INTRODUCTION

Gastrointestinal diseases are various diseases that, if not treated properly, will leave irreparable complications for patients. These diseases can lead to a decrease in the quality of life, psychological stress on the patient and family members, medical costs for the patient and society, a reduction in life expectancy, and increased stress and anxiety (1,2).

One of the life-threatening problems in digestive diseases is gastrointestinal bleeding. Gastrointestinal bleeding is one of the most important internal diseases that manifests itself in the form of bright blood from the anus, hematemesis, melena, hematochezia, and occult blood in the stool. Also, the need for patients' hospitalization has a great psychological and economic burden on the patients. The most important causes of gastrointestinal bleeding are peptic ulcers, esophageal varices, hemorrhoids, fissures, and diverticulum (3-6).

Patients with gastrointestinal disorders (or all patients in general) may be exposed to physical trauma in addition to the complications of the disease and experience various physical injuries and complications. The traumas inflicted on these patients include penetrating and non-penetrating trauma, the complications of each of which are influenced by various factors, including the severity of the injury, the causes of the injury and underlying diseases. The severity of symptoms in these patients varies from pain to hemodynamically compromised due to active bleeding (7-10).

Abdominal trauma includes blunt abdominal trauma (BAT) and penetrating abdominal trauma (PAT). Abdominal trauma leads to many complications, including bleeding, infection, hemorrhage, and mortality. In the event of successful cardiopulmonary resuscitation, the patient is exposed to complications caused by trauma, such as systemic inflammatory response syndrome (SIRS). Also, if SIRS is accompanied by infection, it can lead to sepsis and be life-threatening for the patient (11-13).

To prevent complications of abdominal trauma, it is essential to perform initial clinical examinations, assess the patient's vital signs, obtain a clinical history, and perform a Focused Assessment with Sonography for Trauma (FAST). In addition to the above, obtaining information from the patient or the patient's companion regarding the mechanism of trauma, response to treatment, and assessment of damage to the anatomical areas of lower chest trauma, lower rib fractures, and lumbar spine fractures is of particular importance in performing clinical examinations (11,14,15).

Aim:

Given the importance of identifying the prevalence of abdominal trauma, this study was conducted retrospectively

to compare the patterns and outcomes of patients with penetrating and blunt abdominal trauma.

MATERIALS AND METHODS:

In this retrospective study done in 2019, patients referred to the emergency room of Imam Khomeini Educational and Medical Center in Ilam were included. Initially, the researchers designed a researcher-made checklist and entered the patients' information into this checklist.

The checklist used included questions on sex (female, male), age group (<20, 21-40, 41-60, >60), time of injury (0-6, 6-12, 12-18, 18-24), season of injury (Spring, Summer, Autumn, Winter), educational level (Illiterate, Diploma, University degree), ventilation in ICU (yes, no), health status (Death, Improve), mechanism of injury (traffic accident, stab/Cat, fall, firearm, blast injury, sharp object injury, other), and multiple trauma (yes, no).

In this study, the records of patients who were admitted to the hospital emergency department as temporary or permanent hospitalizations with a diagnosis of abdominal trauma (penetrating and blunt trauma) were included, and information related to the patients' records was extracted. The researchers extracted the patients' information according to the researcher-made checklist by referring to the medical records and entering them into SPSS software version 18, and then the data were analyzed.

RESULTS:

In the BAT group, 70.2% of the patients were male, 68.8% were in the 21-40 years age group, 63.5% of the patients were in the Improve health status, 35.1% were hospitalized due to traffic accidents, 81.7% had multiple traumas, and 51.9% had Glasgow Coma Scale (GCS) between 3-6. Also, in the PAT group, 78.2% of the patients were male, 82.1% were in the 21-40 years age group, 46.2% of the patients were in the Improve health status, 32.1% were hospitalized due to traffic accident, 92.3% had multiple traumas, and 35.9% had GCS between 3-6 (Table 1).

Table 1. Baseline characteristics, N (%)

Variable		Blunt, N=208	Penetrating, N=78	P value
Sex	Male	146 (70.2)	61 (78.2)	0.17
	Female	62 (29.8)	17 (21.8)	
Age group (years)	<20	5 (2.4)	0 (0)	0.36
	21-40	143 (68.8)	64 (82.1)	
	41-60	46 (22.1)	8 (10.3)	
	>60	14 (6.7)	6 (7.7)	

Table 1. Baseline characteristics, N (%)

Variable		Blunt, N=208	Penetrating, N=78	P value
Time of injury	0-6	31 (14.9)	20 (25.6)	0.000
	6-12	43 (20.7)	31 (39.7)	
	12-18	82 (39.4)	24 (30.8)	
	18-24	52 (25)	3 (3.8)	
Season of injury	Spring	39 (18.8)	23 (29.5)	0.05
	Summer	55 (26.4)	18 (23.1)	
	Autumn	60 (28.8)	24 (30.8)	
	Winter	54 (26)	13 (16.7)	
Educational level	Illiterate	142 (68.3)	40 (51.3)	0.015
	Diploma	55 (26.4)	32 (41)	
	University degree	11 (5.3)	6 (7.7)	
Health status	Death	76 (36.5)	42 (53.8)	0.008
	Improve	132 (63.5)	36 (46.2)	
Mechanism of injury	Traffic accident	73 (35.1)	25 (32.1)	0.65
	Stab/Cat	30 (14.4)	17 (21.8)	
	Falling	34 (16.3)	9 (11.5)	
	Firearm	30 (14.4)	11 (14.1)	
	Blast injury	13 (6.3)	12 (15.4)	
	Blast injury	13 (6.3)	12 (15.4)	
	Sharp object injury	17 (8.2)	2 (2.6)	
	Other	11 (5.3)	2 (2.6)	
Multiple trauma	Yes	170 (81.7)	72 (92.3)	0.02
	No	38 (18.3)	6 (7.7)	
Glasgow Coma Scale (GCS)	3-6	108 (51.9)	46 (59)	0.17
	7-10	80 (38.5)	28 (35.9)	
	11-15	20 (9.6)	4 (5.1)	

According to the findings, there was a significant difference between the patients of the two groups in terms of time of injury, health status, and multiple traumas. Also, there was a significant relationship between the mortality rate of the patients and the level of multiple trauma and GCS. Mortality was observed more in patients with multiple trauma and lower GCS (Tables 1 and 2).

Table 2. Baseline characteristics for survived and non-survived, N (%)

Variable		Blunt, N=208	Penetrating, N=78	P value
Sex	Male	87 (73.7)	120 (71.4)	0.67
	Female	31 (26.3)	48 (28.6)	
Age group (years)	<20	2 (1.7)	3 (1.8)	0.43
	21-40	69 (58.5)	138 (82.1)	
	41-60	36 (30.5)	18 (10.7)	
	>60	11 (9.3)	9 (5.4)	
Time of injury	0-6	20 (16.9)	31 (18.5)	0.54
	6-12	37 (31.4)	37 (22)	
	12-18	39 (33.1)	67 (39.9)	
	18-24	22 (18.6)	33 (19.6)	
Season of injury	Spring	25 (21.2)	37 (22)	0.85
	Summer	27 (22.9)	46 (27.4)	
	Autumn	41 (34.7)	43 (25.6)	
	Winter	25 (21.2)	42 (25)	
Educational level	Illiterate	81 (68.6)	101 (60.1)	0.23
	Diploma	30 (25.4)	57 (33.9)	
	University degree	7 (5.9)	10 (6)	
Mechanism of injury	Traffic accident	32 (27.1)	66 (39.3)	0.21
	Stab	21 (17.8)	26 (15.5)	
	Fall	20 (16.9)	23 (13.7)	
	Firearm	19 (16.1)	22 (13.1)	
	Blast injury	16 (13.6)	9 (5.4)	
	Sharp object injury	5 (4.2)	14 (8.3)	
	Other	5 (4.2)	8 (4.8)	
Multiple trauma	Yes	89 (75.4)	153 (91.1)	0.000
	No	29 (24.6)	15 (8.9)	
GCS	3-6	88 (74.6)	66 (39.3)	0.000
	7-10	27 (22.9)	81 (48.2)	
	11-15	3 (2.5)	21 (12.5)	

DISCUSSION:

The prevalence of high trauma and its complications is significant worldwide and also in Iran (16-18). For this reason, this study was conducted with the aim of Comparing the patterns and outcomes of patients with PAT and BAT.

The results showed that 70.2% of patients in the BAT group were male, and 78.2% of patients in the PAT group were female. The study of Zarama and colleagues on BAT patients showed that 74.2% of the patients were male (19). The study of Störmann and colleagues showed that 87.1% of patients in the PAT group were male, and 69.7% of patients in the BAT group were male (20).

The results showed most patients were in the age range of 21 to 40 years. In the study of Rajaei and colleagues, in the group of PAT patients, 17.5% were in the age range of 25 to 29 years and 10.5% were in the age range of 30 to 39 years (21). Also, in the study of Naeem and others, 53.5% of patients diagnosed with BAT and PAT were less than 30 years old (22). People in adolescence and young adulthood are more exposed to various accidents, including traffic accidents, fights, and conflicts (23, 24). For this reason, the rate of BAT and PAT was reported to be higher in people of younger age.

In this study, most of the traumas occurred due to Traffic accidents and stab. In the study of Panchal and colleagues in patients with abdominal trauma, 48% of patients were hospitalized due to road traffic accidents, 32% were hospitalized due to falls, and 18% were hospitalized due to assault/stab injury (25). Also, in the study of Smith and others, 60.62% of patients were hospitalized due to road traffic accidents, 6.94% were hospitalized due to falls, and 16.42% were hospitalized due to assault/stab injuries (26). The findings of this study are consistent with other studies

on the role of road traffic accidents and stab/Cut in causing abdominal trauma.

CONCLUSIONS

Given that the presence of multiple traumas and GCS scores have been associated with patient mortality, it is recommended that these two criteria be examined more carefully when providing clinical care to patients.

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CONFLICT OF INTEREST

The authors have no conflicts of interest to declare related to this work.

DATA AVAILABILITY:

The dataset presented in the study is available at the request of the corresponding author during submission or after its publication.

ETHICAL APPROVAL:

The Ethics Committee of Ilam University of Medical Sciences, Ilam, Iran, approved the study with the ID number IR.MEDILAM.REC.1399.241.

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