



Abdominal penetrating trauma and organ damage and its prognosis

Babak Abri¹, Samad Shams-Vahdati², Seyedpouya Paknezhad³, Pegah Sepehri-Majd⁴, Maral Bahrami⁵

¹ Assistant Professor, Department of Surgery, School of Medicine, Tabriz Branch, Islamic Azad University, Tabriz, Iran

² Associate Professor, Road Traffic Injury Research Center AND Department of Emergency Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

³ Resident, Emergency Medicine Research Team AND Department of Emergency Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

⁴ General Practitioner, Emergency Medicine Research Team, Tabriz University of Medical Sciences, Tabriz, Iran

⁵ Student of Medicine, School of Medicine, Tabriz Branch, Islamic Azad University, Tabriz, Iran

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Abstract

Introduction: Abdominal penetrating trauma is still a serious problem in the world, and due to its high prevalence in young people that impose a heavy economic burden on our country, we decided to evaluate the epidemiologic and demographic status and patient's prognosis.

Methods: This is a descriptive cross-sectional study; all patients with abdominal penetrating trauma referred to the emergency department of Imam Reza Hospital between March 2012 and March 2014 were enrolled to study. Age, sex, injured organs, mechanism of trauma and the prognosis were documented in the checklist. Data was analyzed by SPSS, and descriptive analysis was run.

Results: In this study, 137 patients were enrolled; 103 patients (75.20%) did not have visceral damage. In visceral injury, the spleen was most commonly injured abdominal organ (8.03%). The damage to small intestine was seen in 8 patients (5.84%), kidney and liver damage was seen in 6 patients (4.38%) and 5 patients, respectively, and finally diaphragm and colon injury was seen in 2 patients (1.46%).

Conclusion: According to a recent study, abdominal penetrating trauma mostly occurred in men. The most common cause of abdominal penetrating trauma was related to knife damage; spleen was commonly damaged organ caused by knives and other sharp objects.

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Introduction

Trauma is the most common cause of death in the first four decades of life and is the third most common cause of death regardless of age.^{1,2} And it is a major public health problem in any country regardless of socio-economic level.³ Trauma is divided into 2 types (blunt and penetrating), that their distribution in the population is dependent on the geographical area so that penetrating trauma is more common in cities and blunt type in rural areas.

Abdomen is the third most common area of the body that is damaged due to trauma.

Some abdominal organs are damaged with a higher prevalence due to trauma. In addition to the mechanism of injury, it depends on size and location of the organs inside the abdominal cavity.¹ Abdominal penetrating trauma includes sharp objects damage (stab wound) and gunshot damage (gunshot wound).⁴ It is more common in men than women. The most common cause is the knife; the average age of patients is in the third decade of life.¹

The most common organ involved in abdominal penetrating trauma, are the small

* Corresponding Author: Samad Shams-Vahdati, Email: sshamsv@yahoo.com



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intestine and colon,^{5,6} The most postoperative complications are related to these organs.⁶ In total, main causes of morbidity in abdominal penetrating trauma include: damages that are not detected, uncontrollable bleeding from the liver, spleen or large blood vessels rupture, and infection.¹ And the main cause of morbidity is gastrointestinal perforation and peritonitis.⁷

Diagnostic modalities which are simply conducted by emergency medicine physicians in abdominal trauma are Focused Abdominal Sonography in Trauma Patient (FAST), CT-scan, and diagnostic peritoneal lavage (DPL).⁸⁻¹² Over the past 2 or 3 decades, the use of selective non-operative management has become more common in abdominal penetrating trauma.¹³ There are two absolute contraindications for selective non-operative management in abdominal penetrating trauma including hemodynamic instability and abdominal tenderness which is suggestive of peritonitis.¹⁴ These two type should be placed under an emergency laparotomy.¹⁵

Methods

This is a descriptive cross-sectional study, from March 2012 to March 2014. All patients with chief complain of penetrating abdominal trauma who came to Imam Reza Hospital were enrolled.

Inclusion criteria: All patients with abdominal penetrating trauma referred to Imam Reza Hospital from 2012/03/20 to 2014/03/20

Exclusion criteria: Among patients referred to Imam Reza Hospital, patients who had incomplete records and documents and patients who died before complete diagnosis were excluded.

Variables of the research: Age, sex, cause of trauma, involved organ, prognosis.

In this study, data were entered into SPSS (version 15, SPSS Inc., Chicago, IL, USA) software and analyzed by the descriptive method and the relationship between the variables (factors) were analyzed and evaluate by regression method. P less than 0.05 was considered statistically significant.

Results

From March 2012 to March 2014, 137 patients with abdominal penetrating trauma were referred to the emergency department of Imam Reza Hospital and were studied. Based on the results teens and young adults had the highest number of people with abdominal penetrating trauma. Age group 20 to 30 with 54 patients (39.4%) had highest injured patients, the age group 10 to 20 years with 49 patients (35.8%) was in second place. Age groups under 10 years and over 40 years had the lowest amount of abdominal penetrating trauma. The lowest percentage was in patients aged over 50 years (1.2%) (Figure 1).

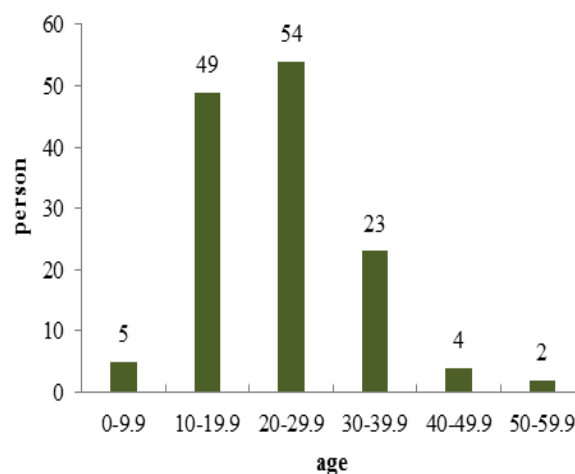


Figure 1. Abdominal penetrating injury frequency by age

Among 137 patients with abdominal penetrating trauma, 119 patients (87%) were men and 18 patients (13%) were women. As for causes of trauma, 132 patients (96%) had trauma from the knife and 5 patients (4%) had gunshot trauma. Eleven patients had spleen injury (8.03%), then spleen was the most common intra-abdominal organ which was injured. The second most common organ affected was small intestines observed in 8 patients (5.84%). Kidney and liver damage were seen in 6 patients (4.38%) and 5 patients, respectively, and finally diaphragm and colon injury were seen in 2 patients (1.46%). In this study, 103 patients (75.2%) did not have visceral injury.

Most of the patients came during 8 am to 8 pm (day), this comprised of 77 patients of

the study population (56.2%). Sixty patients (43.8%) came during 8 pm to 8 am (night). In this study highest diagnostic method used for patients with abdominal penetrating trauma was DPL, This method were used in 82 cases (59.9%) and DPL and CT scans was used combined in 31 cases (22.6%). Also, all of the patients were evaluated by FAST exam.

Most treatments methods in patients with abdominal penetrating trauma was non-surgical with 105 cases (77.0%), and in 32 patients (23.0%) received surgical technique for treatment. Fifteen patients (10.9%) had need of packed cell transfusion. In 122 cases (89.1%), there were no needed of transfusion. Based on the results, 105 patients (76.6%) were discharged without morbidity and 32 patients (23.4%) had morbidity.

Discussion

Trauma is the most common cause of death in the first four decades of life and is the third most common cause of death regardless of age.^{1,2} And it is a major public health problem in any country regardless of socio-economic level in that country.³ By reducing the prevalence of infectious diseases during the past few decades, trauma has become an important factor in morbidity and mortality rates.⁷

Despite recent progress in imaging techniques such as CT-scan, trauma management still remains a challenge for emergency specialists.⁷ Due to increased vehicles on the road and traffic accidents and also increased interpersonal violence as a result of urbanization and industrialization, the prevalence of abdominal trauma has been increased.² According to available reports, in most of the events leading to mortality, abdomen has been involved.⁷

Among 137 patients with abdominal penetrating trauma, 119 individuals (87%) were men and 18 (13%) were women and the ratio of men to women in our study was 6.6 to 1. In this study, age ranged from 6 to 60 years with an average age 24.6 ± 1.02 years and 96% of patients aged under 40 years. According to this study in Tabriz, Iran, abdominal penetrating trauma seen more in young men, men were

involved 6.6 times higher than women.

Among these patients, 132 (96%) were knife trauma and 5 patients (4%) were gunshot trauma. According to the findings, the most abdominal penetrating trauma were related to knife damage, showing the necessity to pay more attention to solving the problems of socio-cultural, on the other hand, low trauma from gunshot can be due to more difficult access to guns in our country. In this study, 75.2% of patients did not have any visceral injury.

Considering that 90% of people are right-handed and instrument of crime usually placed on the right hand of the striker, spleen was the common area of damage caused by knives and other sharp objects.¹⁶ In this study, the most used treatment method in patients with abdominal penetrating trauma was a non-surgical approach (77%) while in 32 cases (23%) surgical methods was used for treatment. Finally, according to diagnostic procedures and treatment, 105 patients had discharged without any morbidity (76.6%) and 32 patients (23.4%) had morbidity. None of the patients in our study had mortality.

Conclusion

According to this study, 87% of abdominal penetrating trauma occurred in men and the ratio of men to women in our study was 6.6 to 1. The most common cause of abdominal penetrating trauma was related to knife damage and spleen was the commonly damaged organ caused by knives and other sharp objects. Among these patients, 76.6% were discharged without any morbidities and none of them had mortality in our study.

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Authors' Contribution

Babak Abri designed the study. Pouya Paknejad and Maral Bahrami collected the data. Samad Shams-Vahdati performed the analysis and critically revised the article. Pegah Sepehri-Majd drafted the manuscript.

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Conflict of Interest

Authors have no conflict of interest.

Ethic Approval

This study was approved by Tabriz Branch, Islamic Azad University.

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