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ORIGINAL ARTICLE

Prevalence of Splenic Injury in the Blunt Abdomen Trauma: A Cross-Sectional Study

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ABSTRACT

Background: Blunt trauma to the abdomen most commonly leads to injury of the spleen. Patients usually presents with left hypochondriac pain or generalized abdominal pain which may radiate to the left shoulder. There can be associated left lower rib fractures. Diagnosis is made on contrast enhanced computed tomography (CT) of the abdomen. Surgical management is warranted in the cases according to AAST Grade of injury. Missed or delayed presentation of injury can lead to mortality hence careful evaluation of mode of injury, complete examination, appropriate investigation and monitoring are vital for patient management.

Objective: The present study aims at the determination of incidence and causes of splenic injury after blunt trauma to the abdomen.

Study design: A cross-sectional study

Place and Duration: This study was conducted at Rawalpindi Medical University from November 2020 to November 2022

Methodology: A total of 195 patients were included in the study. The lowest age limit was 15 years and patients of both genders were considered. The patients with abdominal trauma were received in the emergency department. A detailed history of the event was taken from all the patients with simultaneous resuscitation. After that, a thorough clinical examination was performed on all the patients. The patients were sent for a FAST SCAN and CCET abdomen to diagnose and assess the extent of the injury. The type of trauma that lead to the injury of the spleen, such as road traffic accident (RTA), assault, and fall from height was recorded of each patient. Patients with AAST grade I and II were managed conservatively except in cases where exploration was required for concomitant abdominal injuries however patients with Grade III, IV and V underwent exploration, spleenoraphy or splenectomy respectivelyThe data was collected and analyzed in the IBM SPSS version 26.

Result: A total of 195 patients were studied, out of which 48 (24.61%) were female and 147 (75.38%) were male. The mean age of the patients was 30.45±2.12 years. Overall 12 (6.15%) were detected with splenic injury. A total of 5 (41.67%) had an RTA, 4 (33.33%) had a fall from height, 2 (16.67%) assault, and 1 (8.33%) had sports injury.

Conclusion: The most common type of blunt trauma to the abdomen which resulted in a splenic injury was road traffic accidents followed by fall from height. Early diagnosis is helpful in the proper management of the patient and increasing the survival rate.

Keywords: Splenic injury, road traffic accident, blunt trauma

INTRODUCTION

The most frequently injured solid organ during blunt trauma is the spleen. It is injured in 31-35% of the cases and sometimes up to 50% when all the solid organs of the abdomen are injured [1]. A delay in the diagnosis can lead to serious outcomes, eventually increasing the chances of mortality by up to 18% [2]. The mechanism of injury, hemodynamic status of the patient, and clinical presentation are important factors in the management [3]. The patients which are hemodynamically stable, are sent for a CT scan with contrast of the abdomen for the detection of splenic injury and to check the other injuries associated with it [4]. Diagnosing the extent of injuries in blunt abdominal trauma (BAT) and the provision of right management is a major challenge for surgeons [5].

Blunt abdominal trauma (BAT) accounts for 20% of all the injuries received in an RTA and assault [6]. Almost 6% of these cases need an urgent laparotomy because they involve damage to the spleen, liver, and retroperitoneum [7]. However, the spectrum of solid organ injury followed by a BAT shows the injury of the spleen to be the most common one needing close monitoring of the patient [8]. Splenic injuries are commonly seen in rural as well as urban healthcare setups. They are received mostly as a result of RTA, sports events, and bicycle handlebar accidents or fall from height [9].

In the present study, the frequency of splenic injuries in a BAT and another common type of traumas leading to the injury of the spleen, are studied. While doing this study, a thorough review of the literature was done for a comparison to our results.

METHODOLOGY

The present study is a prospective descriptive cross-sectional study. The minimum age of the participants was 15 years. Both genders were included in the study. A total of 48 (24.61%) patients were female and 147 (75.38%) were male. According to the inclusion criteria of the study, patients with chest injuries were not included in the study. A total of 195 patients with BAT were included by using a consecutive sampling technique. Patients who presented with blunt abdominal injury to emergency department were included in the study. Overall 12 (6.15%) patients were diagnosed with splenic injury.

The details regarding the benefits and purpose of the study were explained to all the patients and they were asked to sign a written informed consent. A detailed history of the patient along with the history related to the trauma event was taken from all the patients along with simultaneous resuscitation.. After that, a clinical examination of all the patients was performed. For the diagnosis of the splenic injury, a FAST scan and contrast enhanced CT scan of the abdomen were chosen as the diagnostic tools.Type of trauma that lead to the injury of the spleen, such as road traffic accident (RTA), assault, sports injuryand fall from height Patients with AAST grade I and II were managed conservatively except in cases where exploration was required for concomitant abdominal injuries however patients with Grade III, IV and V underwent exploration, spleenoraphy or splenectomy respectively

The data was collected and analyzed in IBM SPSS version 26. Stratification of the splenic injury was done among the gender, age, and the type of trauma to check the effect modifications. The results have been tabulated in various tables.

RESULTS

A total of 195 patients were included in the study. Over all 35% of the patients lay in the range of 20 years to 30 years of age. A total of 30% lay in the age group of 31 years to 40 years. Overall 35% of patients were between 41 years to 60 years. The mean age of the patients was 30.45±2.12 years. A total of 12 (6.15%) patients had received a splenic injury in an event of blunt trauma to the abdomen. The remaining 183 (93.84%) patients did not have a splenic injury.A total of 5 (41.67%) had an RTA, 4 (33.33%) had a fall from height, 2 (16.67%)assult, and 1 (8.33%) had sports injury. Stratification of the injury of the spleen was done with the distribution of age and has been shown in table 1. Stratification of the injuries of spleen has been given in table 2 with the gender distribution

Table 1: Stratification of splenic injury according to the distribution of age (n=12)

Type of injury event	Range of age (in years)				Total	P value
Age of the patients (Years)	10-20	21-30	31-40	41-50		
RTA	2 (16.67%)	1 (8.33%)	0 (0%)	2(16.67%)	5 (41.67%)	
Fall from height	1 (8.33%)	1 (8.33%)	1 (8.33%)	1 (8.33%)	4 (33.33%)	
Assault	0 (0%)	0 (0%)	1 (8.33%)	1 (8.33%)	2(16.67%)	
Sports injuries	0 (0%)	0 (00%)	1 (8.33%)	0 (0%)	1 (8.33%)	0.831
Total	3 (25.00%)	2 (16.66%)	3 (25.00%)	4 (33.33%)	12 (100%)	

Table 2: Splenic injury stratification with gender distribution (n=12)

Type of injury event	Male	Female	Total	P value
RTA	4 (33.33%)	1 (8.33%)	5 (41.67%)	
Fall from height	2 (16.67%)	2 (16.67%)	4 (33.33%)	
Assault	1 (8.33%)	1 (8.33%)	2 (16.67%)	0.831
Sports injuries	1 (8.33%)	0 (0%)	1 (8.33%)	
Total	08 (66.66%)	4 (33.33%)	12 (100%)	

DISCUSSION

Abdominal trauma is known to be the leading reason for mortality in the first forty years of life. It is known to be the third most common cause of death all over the world [10]. Similar observations were noted during the current study. Akinkuolie et al conducted a similar study to that of the present study. They included 55 patients in their study that had splenic injuries after blunt abdominal trauma. They identified RTA as the most prevalent cause of splenic injury [11]. Stylianos et al conducted a study to identify the most commonly injured solid organ followed by blunt trauma to the abdomen. They found that the liver and spleen are mostly injured followed by injury of the pancreas and kidneys [12].

Dreizin et al conducted a study to observe the correlation of splenic injury with CT parameters. Their study was more focused on the diagnostic modality of the splenic injury. They concluded in their study that CT volumetry is a more successful technique to model intervention in patients with splenic injury [13]. Guinto et al studied a comparison of total splenectomy and splenic angioembolization. They included 1052 patients with splenic injury in their study. They performed total splenectomy on 95% of patients and splenic angioembolization in the remaining 5% of the patients. The outcomes were similar in all the patients. Hence, they suggested that interventional radiology is reliable and less invasive compared to total splenectomy [14]. Fransvea et al also researched the management of splenic injury. They included 68 patients in their study who had a splenic injury. They determined splenic injury as the most common injury in an event of abdominal trauma. Their main focus remained on the conservative management of the splenic injury rather than the operative one. They concluded that conservative management is possible and has positive outcomes as well, however, the modality is controversial and strict prerequisites are needed to be assessed [15].

CONCLUSION

Splenic injury has a higher incidence in abdominal trauma of blunt nature and it is found mostly in patients received after an RTA or fall from height. High index of suspicion and early diagnosis is vital in the proper management of the patient, reducing the morbidity and increasing the survival rate.

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