

FREQUENCY OF HEMOPERITONEUM IN BLUNT TRAUMA ON ULTRASOUND

Mohammad Iqbal¹, Abdullah¹, Zafar Iqbal²

ABSTRACT

Objective: To determine the frequency and etiology of Hemoperitoneum presenting with blunt abdominal trauma to the department of Radiology of a tertiary care hospital

Material And Methods: This descriptive, cross-sectional study was conducted in the Radiology Department of Lady Reading Hospital, Peshawar, from May 2013 to November 2013.

Results: In this study, the number of participants was 237; with mean age of 41 years (standard deviation ± 11.26). Seventy five percent were males and 25% were females. Seventy eight percent had road traffic accidents, 8% had fall from height and 14% had assault /Hit, in which 18% had hemoperitoneum.

Conclusion: Early diagnosis of Hemoperitoneum on ultrasound reduces mobility and mortality

Key Words: Hemoperitoneum, trauma, blunt, abdominal, trauma.

INTRODUCTION

Abdominal trauma ranks third as a cause of traumatic deaths after head and chest injuries. The frequency of Hemoperitoneum is seen to be in the range of 10 – 15%¹. The most important pre-operative objective in the management of patients with abdominal trauma is to ascertain whether or not a laparotomy is needed². The detection of free intraperitoneal blood is the primary objective in the evaluation of blunt abdominal trauma. Small anechoic stripe in the Morrison's pouch represents about 250ml of blood³.

Ultrasound estimates of amount of Hemoperitoneum do correlate with the extent of visceral injury and expected clinical outcome either by medical or surgical management⁴. Detection of free fluid in unstable patient should proceed to laparotomy. In patients with negative initial scan, serial ultrasounds can also improve the sensitivity of free fluid detection and will avoid missing significant injuries⁵. Majority of patients with a high ultrasound score will require therapeutic laparotomy while most of those with a low score can be managed conservatively⁶.

The current study is designed to determine the frequency of Hemoperitoneum on ultrasound abdomen and also to quantify in terms of frequencies the common

types of trauma leading to Hemoperitoneum. The results of this study will be shared with relevant authorities to design strategies to prevent these types of injuries and improve further management of such patients.

MATERIALS AND METHODS

This descriptive Cross-sectional study was conducted in the Radiology Department, Lady Reading Hospital Peshawar. The duration of study was 6 months (from November 2013 to May 2014). The numbers of participants was 237 and patients above 15 years and of either gender were included in the study. Exclusion criteria were pediatric patients, pregnant women, victim of penetrating abdominal injuries and patients with bleeding disorders. All the patients who presented to the Accident and Emergency department and Outpatient department of the hospital and who were referred for Ultrasound examination with history of blunt trauma were included. Ultrasound was performed by a trained sonologist. The findings were recorded on a printed proforma along with short history of the incident and the patients were then followed in the surgical and allied departments of the hospital during their stay.

RESULTS

Table-1 and 2 show the age and gender distribution among 237 patients. Table 3 shows the type of trauma amongst these patients, which indicates that about 3/4th of these patients have suffered from road traffic accidents. The frequency of Hemoperitoneum was 18% (43 patients). Amongst 43 patients, about 50% were below 30 years of age, and the rest were above 30 years. The number of males amongst these 43 patients was 32, while the rest were females. Table 4 shows the etiology of blunt trauma and Hemoperitoneum, in which most of the bleeding occurred in patients who suffered from road traffic accidents (67%). Eleven

¹ Department of Radiology, Postgraduate Medical Institute, Lady Reading Hospital, Peshawar

² Department of Surgery, HMC, Peshawar

Address for correspondence:

Dr. Mohammad Iqbal

Assistant Professor of Radiology,
Postgraduate Medical Institute,
Lady Reading Hospital,
Peshawar
Cell: 0333-9692822

Table: 1 (Age distribution of patients in the study)

Age Distribution	Number of Patients with Percentage
15-20 years	24 (10%)
21-30 years	83 (35%)
31-40 years	71 (30%)
41-50 years	35 (15%)
51-60 years	24 (10%)
Total	237 (100%)

Table: 2 (Gender distribution of patients)

Gender Distribution	Number of Patients with Percentage
Male	178 (75%)
Female	59 (25%)
Total	237 (100%)

Table: 3 (type of trauma inflicted by the patients)

Common type of trauma	Number of Patients with Percentage
Road traffic accident	185 (78%)
Fall from height	20 (8%)
Assault / Hit	32 (14%)
Total	237 (100%)

Table:4 (the etiology of blunt trauma and Hemoperitoneum)

Hemo-peritoneum	Road traffic accident	Fall from height	Assault /Hit	Total
Yes	29	5	9	43
No	156	15	23	194
Total	185	20	32	237

patients (26%) amongst those with Hemoperitoneum died during treatment.

DISCUSSION

In urban areas of Khyber Pakhtunkhwa, road traffic accidents like vehicular crashes, motorcycle accidents, and pedestrian hit by moving vehicle are more common. Our study shows that most of the patients were in age ranged 21-30 years. Moreover, males outnumbered female, as males are more vulnerable to road traffic accidents and physical activities. Similar results were observed in another study done by Pattan A et al. in which 40% patients were in age ranged 21-30 years and 33% patients were in age ranged 31-40 years⁷. Similar results were also quoted in another study done by Aldemir M et al. in which significantly more males than females presented with abdominal trauma (87.1%

vs 12.9%), which is consistent with Lone *et al.* report of a male to female ratio of 4.4: 1 among abdominal trauma patients^{8,9}. Young males, those aged 20 to 30 years, have been reported to be the most frequent victims¹⁰. Consistent with our results, previous studies found that most abdominal injuries were caused by blunt trauma¹¹. Blunt abdominal trauma is more likely to be missed because clinical signs are less obvious. Blunt injuries have been reported to predominate in rural areas, but in our study, no such demographic pattern was detected.

Vehicle accidents are a common cause of blunt abdominal trauma¹². In our study, they were the most common cause (62.8%). Others have also found that the main causes of blunt abdominal trauma are road accidents, interpersonal violence, and falls¹³. Blunt abdominal trauma in the present study was strongly associated with other comorbid injuries (76.7%). The most common comorbid injury was to an extremity.

The overall mortality rate among patients with Hemoperitoneum after blunt abdominal trauma in our study was 26%, which is relatively high. Other investigators have reported much lower mortality rates of 9.2% and 8.2% in penetrating and non-penetrating injuries, respectively¹⁴. The reasons for this significant difference is probably increased number of hemodynamically unstable patients, delay in arrival to a proper medical facility, other co-morbid conditions and head injuries. Increasing age was an additional risk factor among those with blunt injuries. Other investigators have reported that conditions such as female sex, length of interval between injury and medical intervention, presence of shock at admission, presence of cranial injury, and high penetrating abdominal trauma index are all predictors of mortality in both penetrating and blunt abdominal trauma¹⁵.

Road traffic controlling authorities in both urban and rural area of our province need to concentrate on the quality of roads, regulations, law enforcement, and public education. It is thus the responsibility of governmental as well as some nongovernmental organizations to take part in prevention of further road traffic accidents. Specific measures to educate the public at large by relevant institutions must be made a priority by the government, so as to decrease the rates of motorcycle accidents. We need to develop child safety legislations and risk-specific intervention programs in our province.

The results of this study emphasizes over the implementation of legislation and further strict actions to avoid traffic rules violations, so as to prevent such injuries. Similarly, the government should take necessary measures to provide immediate management facilities of such patients at the rural and district hospitals so as to decrease the time duration to reach a health facility. This study is a small one and is limited to a single center, and further such studies are needed to highlight the significance of this serious problem, so as to enforce rule of law and legislations to prevent such accidents in future.

CONCLUSION

Early diagnosis of Hemoperitoneum on ultrasound reduces mobility and mortality.

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