ORIGINAL ARTICLE

Mode of Retroperitoneal Organ Injuries Following Blunt Abdominal Trauma

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ABSTRACT

Aim: To find out the frequency of mode of retroperitoneal organ injuries following blunt abdominal trauma.

Methodology: It was a cross sectional study and conducted at Department of Surgery, Nishtar Hospital Multan from July 2014 to January 2015. Total 100 cases having history of blunt trauma abdomen and undergoing exploratory laparotomy were included in the study.

Results: In 61(61%) cases mode of injury was road accident followed by physical assault 11(11%) and fall from height 28(28%). Pancreatic injury was seen in 24(24%) cases, injury of duodenum was noted in 28(28%) and kidney was injured in 32(32%) cases. There is significant association of mode of injury with gender and age.

Conclusion: Most frequent reason of blunt abdomen trauma was road accidents and most of the cases were found with injury of kidney.

Keywords: Retroperitoneal organs, blunt trauma, Road traffic accidents.

INTRODUCTION

Like other developing countries, trauma is one of the leading preventable causes of mortality and morbidity in Pakistan[1]. In Pakistan accidental trauma ranked four among the chief causes of death. Trauma accounts about 8% of all the deaths in our country. Approximately, 140,000 individuals die in accidents, and approximately double the number are disabled by trauma yearly[2]. Trauma is defined as damage to the body by exchange with environmental energy that is beyond body's resilience[3]. Due to large surface area, abdomen is the most frequently injured regions of the human body[4]. The retroperitoneum is that part of abdomen which is separated from peritoneum anteriorly by the posterior peritoneal fascia and is bounded posteriorly by the fascia transversalis. It contains portions of the duodenum and colon as well as the kidneys, adrenal glands, pancreas, inferior vena cava (IVC) and abdominal aorta. About 75% of abdominal trauma follows blunt injury[5]. Associated injuries of blunt abdominal trauma are head injury, chest trauma and bony injury. Moreover, the decision to perform laparotomy for blunt abdominal trauma is more complex and difficult, as structural injury being less obvious. Injuries of the retroperitoneal organs occur mainly in patients with polytrauma[6].

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METHODOLOGY

It prospective study was done at Department of Surgery, Nishtar Hospital Multan from July 2014 to January 2015. Total 110 consecutive cases sustaining blunt trauma abdomen were recruited. Before commencing the research, an approval was obtained from review committee of institution and written informed consent was taken from every patient. All patients either male or female having age 12 to 60 years, presenting with history of blunt trauma abdomen and undergoing exploratory laparotomy were included in the study. The diagnosis of blunt abdominal trauma was made on the basis of presence of tenderness, rigidity, and bruise on the abdominal wall. Patients presenting within 12 hours of sustaining injury will be included in the study. Patients managed non-operatively, patients suffering from any kind of penetrating abdominal injury and moribund patients of ASA-5 were excluded from the study.

Demographic profile of all the subjects was entered in pre-designed Performa. Mode of injury and intra-abdominal injuries involving the kidney, pancreas and duodenum were noted. The scale devised by the Organ Injury Scaling Committee of the American Association for the Surgery of Trauma was used to grade the injuries to various organs. Grading of injuries was verified by attending consultant. Data was analyzed by using SPSS version 17. Numerical variables were presented as mean and SD. Frequencies and percentages were calculated for categorical data. To see the association between different variable, chi square test was used and p value 5% was considered as significant.

RESULTS

The detail of results is given in tables 1, 2 and 3 and Fig 1. Total 100 case of blunt abdomen trauma were recruited. Mean age of the cases was 38.12±11.34 years. In 61(61%) cases mode of injury was road accident followed by physical assault 11(11%) and fall from height 28(28%) (Fig. 1). Out of 61 cases of road accident, 41(67.21%), 18(29.51%) and 2(3.28%) cases belonged to age group 12-35 years, 36-50 years and 51-70 years respectively. Out of 28 cases injured with fall from height, 14(50%) belonged to age group 12-35 years, 9(32.14%) belonged to age group 26-50 years and 5(17.86%) belonged to age group 51–70 years. Cases having history of physical assault was 11, of which 6(54.55%) belonged to age group 12-35 years, 3(27.27%) to age group 36-50 years and 2(18.18%) cases belonged to age group 51-70 years. But mode of injury insignificantly (P=0.148) associated with age of the cases.

Fig. 1: Mode of injury

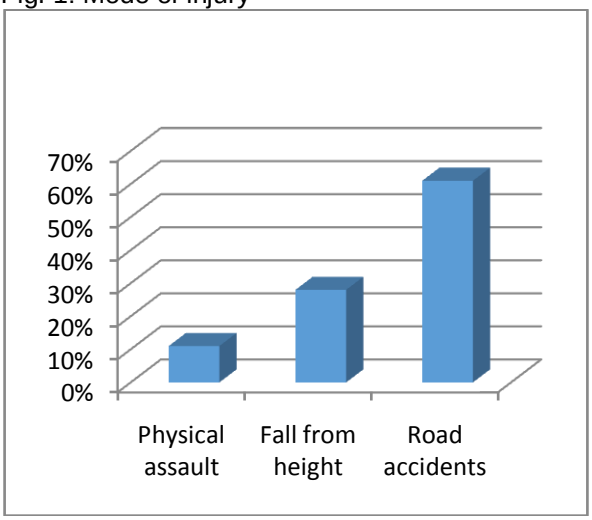

Table 1: Organ injuries and grades

Organ injury	Grade of injury					Total
	I	II	III	IV	V	
Kidney	5(15.63%)	10(31.25%)	8(25%)	6(18.75%)	3(9.38%)	32(32%)
Duodenum	4(14.29%)	14(50%)	6(21.43%)	3(10.71%)	1(3.57%)	28(28%)
Pancreas	5(20.33%)	9(38.37%)	5(20.83%)	4(16.67%)	1(4.17%)	24(24%)
Pancreatoduodenal	11(68.75%)	4(25%)	1(6.25%)	0	0	16(16%)
Total	25(25%)	37(37%)	20(20%)	13(13%)	5(5%)	100

Table 2: Gender distribution

Mode of injury	Male	Female	Total
Road accidents	49(81.82%)	12(19.67%)	61(61%)
Fall from height	18(64.29%)	10(35.71%)	28(28%)
Physical assault	7(63.64%)	4(36.36%)	11(11%)
Total	74(74%)	26(26%)	100

P value 0.196

Table 3: Age distribution

Mode of injury	Age group (Years)			Total
	12-35	36-50	51-70	
Road Accident	41(67.21%)	18(29.51%)	2(3.28%)	61(61%)
Fall from Height	14(50%)	9(32.14%)	5(17.86%)	28(28%)
Physical Assault	6(54.55%)	3(27.27%)	2(18.18%)	11(11%)
Total	61(61%)	30(31%)	9(9%)	100

P value 0.148

DISCUSSION

In present study, males were more victim of abdominal trauma as compare to females (74% vs 26%). Similar finding was reported by Khan et al[5] in which young males aged group 20 to 30 years were the most frequent victim of blunt abdominal trauma. In this study, road accident was the most common (61%) cause of blunt abdominal trauma. The second most common (28%) cause was falling from a height and the third was Physical assault (11%). Some other studies also reported that road accidents, interpersonal violence and falls from height as main causes of blunt abdominal trauma[7,8]. Ahmed et al also reported trauma as the leading cause of mortality in subjects having age 1-44 years[9]. Blunt abdominal trauma accounted for 79% cases and males are more victim of blunt abdominal trauma as compare to female. In one study by Bhattacharjee et al[10] blunt abdominal trauma is more frequent in males

aged 21-30 years; the majority of patients were injured in automobile accidents.

In our study, the most common injured organ was kidney (32%) and second most common (28%) injured organ was duodenum. A study by Zaydfudim et al[11] indicated that most of patients with vertical deceleration injuries (i.e., falls from heights), only 5.9% had blunt abdominal injuries. This is consistent with the results, studies by Bhattacharjee et al[10] and Antonacci et al,[12] injuries to the duodenum account for approximately 3% to 5% of abdominal trauma.

In our study, kidney damage was noted in 32% cases. Grade I injury was seen in 15.63% cases, Grade II, III, IV and V injuries were seen 31.25%, 25%, 18.75% and 9.38% respectively. Similar findings were reported by Wong et al[13.] In our study, pancreas was injured in 24% cases, whereas 16% had pancreatoduodenal injuries. Traumatic injuries of the pancreas occur after blunt abdominal trauma or penetrating wounds with a ratio of 3:1[12].

CONCLUSION

Road accidents were the most common cause of blunt abdominal trauma and most of the cases were found with injury of kidney. This study highlights the need for prioritizing a public health approach to abide by traffic laws and violence prevention in Pakistan.

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