A CLINICAL STUDY ON LAPAROTOMY FINDINGS IN BLUNT INJURY ABDOMEN

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ABSTRACT

BACKGROUND

Blunt injury abdomen is most commonly caused by road traffic accidents. The rapid increase in number of motor vehicles and its aftermath has caused rapid increase in number of victims of blunt abdominal trauma. Motor vehicle accidents account for 75%-80% of blunt abdominal trauma.

MATERIALS AND METHODS

The present study comprises of 50 patients with blunt abdominal injuries admitted in surgical wards from December 2015 to November 2017. Patients were methodically enquired according to the proforma approved by the guide. A detailed history as to the mode of injury, thorough clinical examination and necessary investigations like routine investigations, special investigations including ultrasound and CT scan were done.

RESULTS

In this study, majority belonged to 21 - 30 years of age accounting to 42 percent followed by 31 - 40 years of age (22%). Sex wise distribution showed that majority (92%) were males and only 8% were females. Ultrasonography of abdomen was done in all 50 cases. Injury to spleen was most common (38%) followed by liver in 24% of cases on Ultrasonography abdomen. CECT was done in 35 cases. In CECT also, spleen was the most common organ to be injured (34.3%) followed by liver (28.6%) and hollow viscus (25.7%). A total of three patients died in this study.

CONCLUSION

Blunt injury abdomen with solid organ injury forms considerable load of patients in our society. Measures for early transport of the patients from the accident site to the trauma centres should be undertaken. Early diagnosis and repeated clinical examination and use of appropriate investigation form is the key to managing blunt injury abdomen patients.

KEYWORDS

Blunt Injury Abdomen, Laparotomy, Surgery, Road Traffic Accidents.

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BACKGROUND

Blunt injury abdomen is most commonly caused by road traffic accidents. The rapid increase in number of motor vehicles and its aftermath has caused rapid increase in number of victims of blunt abdominal trauma. Motor vehicle accidents account for 75% - 80% of blunt abdominal trauma. Blunt abdominal injury is also a result of fall from height, assault with objects, industrial mishaps, sports injuries, bomb blast and fall from riding bicycle.^[1,2]

Blunt abdominal trauma is usually not obvious, hence often missed unless repeatedly looked for. Due to the delay in diagnosis and inadequate treatment of the abdominal injuries, most of the cases are fatal. The knowledge in the management of blunt abdomen is progressively increasing. In spite of the best techniques and advances in diagnostic and supportive care, the mortality and morbidity remains at large. The reason for this could be due to the

interval between trauma and hospitalisation, inadequate and lack of appropriate surgical treatment, delay in diagnosis, post-operative complications and associated trauma especially to head and thorax.^[3,4] In view of increasing number of vehicles and consequently road traffic accidents, this dissertation has been chosen to study the cases of blunt injury abdomen presenting at Govt. General Hospital, Guntur attached to Guntur Medical College.

MATERIALS AND METHODS

Source of Data and Period of Study

The present study "A CLINICAL STUDY ON LAPAROTOMY FINDINGS IN BLUNT INJURY ABDOMEN" comprises of patients admitted to and operated in various surgical units in the Department of Surgery at Government General Hospital, Guntur, attached to Guntur Medical College, Guntur, from December 2015 to November 2017. Study design was a case series.

Collection of Data, Sample Size and Mode of Selection

50 patients with blunt abdominal injuries admitted to surgical wards were included in the study. Patients were methodically enquired according to the proforma approved by the guide. A detailed history as to the mode of injury, thorough clinical examination and necessary investigations like routine investigations, special investigations including ultrasound and CT scan were done.

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Inclusion Criteria

All patients with blunt abdominal injury for whom laparotomy was done with intra-abdominal injuries were included in the study.

Exclusion Criteria

Patients who died before confirmation of definitive diagnosis were excluded from this study.

Method

The management was individualised, and each case was assessed on its own. In patients where laparotomy was performed after resuscitation, the details regarding the viscera injured and nature of surgery performed were recorded.

Each case was carefully followed up to evaluate the progress of patient and to note the development of complications if any and its management.

Statistical Analysis

The details of all cases are summarised in the master chart and results of the study have been analysed in detail. Statistical analysis was done using Microsoft Excel 2010 version. Data was presented in percentages and proportions.

RESULTS

From December 2015 to November 2017, 50 number of cases were studied which belonged to surgical units in Government General Hospital, Guntur.

In this study, majority belonged to 21 - 30 years of age accounting to 42 percent followed by 31 - 40 years of age (22%). Sex wise distribution showed that majority (92%) were males and only 8% were females.

With regards to mode of injury, in 86% of cases mode of injury is road traffic accidents followed by fall from height accounting to 8%. Least was agricultural work-based injury.

Clinical Presentation

84% of the patients presented with abdominal pain followed by abdominal guarding and rigidity. Only 8% of patients presented with shock.

Latent period which is the time interval between time of injury to time of presentation to the hospital. 64% of people presented within first 12 hrs. of injury. 28% between 12 - 24 hours and 8% people late period of upto 4 days.

Associated injury along with abdominal injury was present in 37 cases. The common extra-abdominal injury was thoracic in the form of fractured ribs and haemothorax followed by extremities fracture, head injury, pelvis and soft tissue injury.

Investigations

Haemoglobin was above 10 gm in 38% of patients and was below 8 gm in 26% of cases. Haematocrit was done in 45 patients. It was below 30 in 40% of the patients.

Urine microscopy showed RBCs in 20% of cases and normal in 80% of cases.

Plain X-ray Erect Abdomen was done in 46 cases and was not done in 4 cases, as they were haemodynamically unstable. 20% of x-ray Erect Abdomen was normal in our study.

Four Quadrant Aspiration (FQA) was positive in 30 cases, negative in 14 cases and not done in 6 cases.

Ultrasonography of abdomen was done in all 50 cases. Injury to spleen was most common (38%) followed by liver in 24% of cases on Ultrasonography abdomen.

Organ	No. of Cases	Percentage
Spleen	19	38
Liver	12	24
Kidney	1	2
Pancreas	2	4
Hollow Viscus	0	0
Mesentery	0	0

Table 1. Organ Injury in USG Abdomen

Organ Injured	No. of Cases	Percentage
Spleen	12	34.3%
Liver	10	28.6%
Hollow Viscus	9	25.7%
Pancreas	3	8.6%
Kidney	1	2.8%

Table 2. CECT Abdomen

CECT was done in 35 cases. In CECT also, spleen was the most common organ to be injured (34.3%) followed by liver (28.6%) and hollow viscus (25.7%). Those patients who did not undergo CECT, either they were taken for laparotomy or haemodynamically unstable.

Types of Surgery

The below data shows various operative procedures carried out during exploratory laparotomy.

Procedure	No. of Patients	Percentage
Splenectomy	11	22
Hepatorrhaphy	8	16
Closure of perforation	7	14
Splenorrhaphy	4	8
Resection anastomosis	4	8
Drainage procedure	3	6
Splenorrhaphy and mesenteric closure	3	6
Mesenteric rent closure	2	4
Colostomy	2	4
Hepatorrhaphy and Mesenteric closure	1	2
Resection anastomosis and mesenteric closure	1	2
Hepatorrhaphy and Splenorrhaphy	1	2
Resection anastomosis and pancreatic tube	1	2
Hepatorrhaphy and closure of perforation and resection anastomosis	1	2

Table 3. Type of Surgery

Among the total cases 3 developed wound infections, 5 had respiratory complications, one case each developed wound dehiscence and intra-abdominal abscess respectively post operatively. Mean duration of stay in the hospital was 16 days and ranged from 10 - 54 days.

Mortality

Total three patients died in this study. Two cases have pancreatic injury. One case had duodenal transection injury

along with grade IV pancreatic injury. Therefore, the mortality rate was 6 percent.

DISCUSSION

Males are more common victims of blunt trauma abdomen and the incidence is slightly more in males, as males are more involved in RTA.

Similar findings were seen in Davis et al study (70% males) and Vignesh et al study^[5] (75%) males.

Age Group

In our study, majority of the population belonged to 21 – 30 yrs. of age followed by 31 – 40 yrs. of age, as young people are involved in RTA which is comparable to Davis et al and Vignesh et al.^[5]

Mode of Injury

RTA is the most common mode of injury, because of increased number of vehicles recently. The young people also give priority to speed rather than safety. These findings were in concurrence with findings from Davis et al (70%) and Vignesh et al^[5] (57%), which were due to road traffic accidents.

Clinical Presentation

In our study, abdominal pain was the most common presenting complaint accounting to 84%. Peritonitis was the next most common presentation in 56% of patients. The signs and symptoms are misleading in case of blunt trauma abdomen and are masked by concomitant head injury, chest injury and alcohol consumption. Retroperitoneal organ injury was missed in USG abdomen.

In Davis et al study, 43% had no specific complaints. So, this emphasises the importance of careful and continuing observation and repeated clinical examination of individual with-

Latent Period

Latent period is the interval between the time of injury to presentation to our hospital. In our study, 64% of patients presented between 1 - 12 hrs. after injury. 24% presented 12 – 24 hrs. after surgery. This time lag is due to lack of facility for transport, patient's tolerance of pain in rural areas, negligence of attenders and lack of proper health care at peripheral centres.

Ultrasound Examination

USG abdomen (Focussed assessment with sonography for trauma) was done in all cases, out of which 42 cases have solid organ injury. Free fluid in abdomen was found in nearly 45 cases. Therefore, USG was more reliable in solid organ injury than hollow viscus injury.

Organ	% in our Study	Cusheri et al ^[6]	Davis et al	Cox et al ^[7]	Khanna et al ^[8]
Spleen	38%	25%	25%	46%	26%
Liver	24%	15%	16%	33%	37%

Table 4. Comparison of Results of USG (FAST)

From the above table splenic injury is the most common finding in USG followed by liver injury. Relatively less specific in hollow viscus injury.

Imaging is essential in early decision making. Focussed assessment with sonography in trauma (FAST) examination of pericardial, perihepatic, perisplenic and pelvis areas help in early detection of clinically significant abdominal injury. FAST examination can be performed repeatedly and is an excellent adjuvant to physical examination.

CECT abdomen: CECT was done in 35 cases. Six patients who presented in shock were immediately taken for laparotomy after FAST. It can accurately diagnose the grade of solid organ injury. It can also pick up retroperitoneal organ injury like kidney and pancreas.

In our study CECT was accurate for 12 cases of spleen, 10 cases of liver, detected 3 out of 5 cases of pancreatic injury. It also helped to detect hollow viscus injury non-specifically upto 18% of the cases.

Organ	Our Study	Davis et al	Cox et al ^[7]	Allen et al ^[9]
Spleen	36%	25%	46 %	
Liver	24%	16%	33%	33%
Kidney	2%			
Bowel Injury	34%			
Pancreas	20%			

Table 5. Organ Injury Comparison with Other Studies

Our study has similar percentage in case of splenic injury followed by liver injury and bowel injury. Bowel injury has same percent when compared with Hackman et al study. Splenic injury has relatively similar incidence when compared with Davis et al and Cox et al^[7] studies.

Our study has similar rate of Splenectomy (22 cases) when compared to other studies of Yogesh et al (53%) followed by primary closure with Hepatorrhaphy. In our study, most common GIT surgery performed is resection and anastomosis similar to other studies.

CONCLUSION

Blunt injury abdomen with solid organ injury forms considerable load of patients in our society. Most common age group involved is 21 - 30 years. Predominantly, males are affected in large proportions. Road traffic accidents forms the most common mode of injury. So, efforts should be made to bring road traffic regulations into strict action and traffic norms regulated. The well-established trauma care centres should be established at every Taluk hospitals.

Measures for early transport of the patients from the accident site to the trauma centres should be undertaken. Significant number of cases will have associated injuries with blunt injury abdomen like head injury, thoracic injury and extremity fractures. Blunt injury abdomen is usually less obvious. Hence, repeated examinations by multispecialty personnel in a specialised trauma centre is required. Erect abdomen x-ray is a useful investigation to identify associated hollow viscus injury. Falling titres in serial haematocrit value indicates ongoing bleeding.

With advent of high resolution, ultrasonography (FAST) and FQA, investigations are becoming less opted. CECT forms the core investigation of choice in dealing with blunt injury abdomen patients and becomes more important in deciding operative versus conservative management. Early diagnosis and repeated clinical examination and use of appropriate investigation form the key in managing blunt injury abdomen

patients. Associated extra-abdominal injuries like head, thoracic and orthopaedic injuries influenced the morbidity and mortality of the patients.

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