



Diagnosis and Management of Blunt Trauma Abdomen

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Introduction

Blunt injury as causes of intra-abdominal injuries have been recognized since historical times. Aristotle was the first to record visceral injuries from blunt trauma. Hippocrates and Galen are said to have given apt description of the condition.^[1]

The development of emergency medical service is an important milestone in the history of clinical and surgical practice of trauma. Greeks required physicians to be present during the battle and Romans established the hospitals close to the battlefield.^[1] Advanced imaging techniques like spiral CT scan and MRI has made early detection of blunt abdominal injuries easier.

In view of increasing number of vehicles and consequently road traffic accidents, this dissertation has been chosen to study the cases of blunt abdominal trauma with reference to the patients presenting at health care centre and purpose of present study to know role of ultrasonography and x-ray abdomen standing in diagnosis of blunt trauma abdomen and to compare conservative management with operative management.

Aims and Objectives

1. To study role of ultrasonography; X-Ray abdomen Standing and CT scan in blunt trauma abdomen.
2. To study conservative vs operative management.

Material and Method

Present prospective study conducted at department of surgery G R Medical College Gwalior from July 2011 to June 2013, total 150 patients included in study that got admitted in department coming from casualty and OPD, after hospitalization patient resuscitated, proper history noted, specially noted mood of trauma RTA, fall or assault, and examined for site and severity of trauma. When patient get stable then proceeded for investigation according to needs to confirm diagnosis. once patients diagnosis confirmed then some patient treated conservative those doesn't needs surgery and those patient needs surgery shifted to OT and operated operative finding noted for data ie.name of organ injured grade of injury salvageable or not. In post operative period treated

according to needs, after recovery patient discharged and called for follow up in OPD.

Result

This is a prospective study of 150 cases of blunt abdominal trauma conducted in health care centre from July 2011 to June 2013. Males (83%) outnumbered females (17%). The most common age group affected is of 21-30 years which forms the young and reproductive group. Road traffic accident forms the most common mode of injury (56.2%). Majority of our study population (90%) presented with pain abdomen followed by abdominal distention (56%). The latent period in

our study was < 18 hours in 90% of cases. X ray erect abdomen and chest X ray forms important investigational tools. Ultra sonography (FAST) has picked up solid organ injury or collection in 90-95% of cases. So it becomes an important tool in emergency set up, more so in hemodynamically unstable patients. The most common injured organ in the present study is spleen followed by liver, kidney, bowel and pancreas in the decreasing order. For splenic injury, most common surgery performed was Splenectomy in 21 patients followed by splenorraphy in 4 patients. Rest was all managed conservatively.

Table: 1 Age distribution

Age group	Our study	Davis et al ²⁵
11-20	4.1%	19%
21-30	45.8	24%
31-40	29.2	15%
41-50	8.3	13%
51-60	8.3	6%
61-70	2.1	3%
71-80	2.1	-

Table: 2 mode of injury

Cause	Our study	Davis et al ²⁵	Khanna et al ²⁶
Road Traffic accident	56.2%	70%	57%
Fall from height	25%	6%	15%
Assault / injury with blunt object	18.8%	17%	33%

Table: 3 incidence of organ injury

Organ injured	Our study	Cusheri ¹	Davis et al ²⁵	Cox et al ²⁸	Khanna et al ²⁶
Spleen	39.6%	25%	25%	46%	26%
Liver	37.5%	15%	16%	33%	37%
Kidney	12.5%				
Pancreas	4.16%				
Mesentery	4.1%	5%	4%	10%	47%
Bladder	2%	6%	4%		

Table: 4 Organs involved in Polytrauma

Organs injured	No of patients	Percentage
Spleen + hollow viscus	4	8.3%
Spleen + renal	2	4.2%
Spleen + liver	2	4.2%
Renal + hollow viscus	1	2.1%
Spleen + Liver + renal	1	2.1%
Liver + pancreas	2	4.2%
Total		25%

Discussion

In our study male to female ratio is 83.3:30, it is clear that males are more common victims of blunt trauma abdomen when compared to Davis et al study.^[2] The incidence is more in males as males are involved in road traffic accident (RTA) and Assaults.

Age group - in our study majority of our study population belonged to 21-30yrs of age followed by 31-40yrs of age as young people are involved in RTA which is compared to Davis et al study^[2] as showed in table 1.

In our study blunt trauma injury percent due to road traffic accident, fall from height and assault injury with blunt object is 56.2%, 25% and 18.8% which compared with Devis et al^[2] 70%, 6% and 17% and Khanna et al^[3] 57%, 15% and 33% as showed in table 2, it clearly states that 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.

In our series abdominal pain was the most common presenting complaint accounting 90%. Abdominal distention was next most common presentation in 56% of cases. 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 DPL and USG abdomen. In Davis et al study^[2] 43% had no specific complaints. So this emphasizes the importance of careful and continuing observation and repeated clinical examination of individuals with blunt trauma abdomen.

Latent period is the interval between the time of injury to presentation to our hospital . 41.7% of our patients presented between 7-12 hours after injury. 31% presented within 6hrs after injury. This time lag is due to lack of facility for transport. Many belonged to rural area. Urine microscopy was done in all cases. There was hematuria either macro/micro in 24 cases. All the cases showed renal injury on CT scan. Plain erect X ray of abdomen was done in 135 cases. Gas

under diaphragm was found in 15 cases. In Davis et al study abdominal X ray was abnormal in 21% cases. In our study it is abnormal in 23% of cases of blunt injury abdomen. USG abdomen (Focussed Abdominal Sonography for Trauma) was done in all cases out of which 135 cases had solid organ injury. Therefore USG abdomen is more reliable in detecting solid organ injury and free fluid in the abdomen. Imaging is essential in early decision making. Focussed Assessment with Sonography in Trauma (FAST) examination of pericardial, peri-hepatic, peri-splenic and pelvic areas help in early detection of clinically significant abdominal injury. FAST examination can be performed repeatedly and is an excellent adjuvant to physical examination compared with mohamaddi A et al study 2012^[4], 2008^[5] and Lee BC et al study.^[6]

In our study, spleen is the most common organ injured in blunt injury abdomen as compared to international series, accounting to 40%, followed by liver in 37.5% cases and kidney in 12.5% cases as compared with Cusherri et al^[1], Davis et al^[2], Cox et al^[7], Khanna et al^[3] study as showed in table 3.

In our study, most patient of blunt trauma abdomen was managed conservatively and closure of bowel which was associated with solid organ injury was done in 15 cases. Splenectomy was done in 21 cases because of hemodynamic instability and severity of injury. Splenorrhaphy was done in 6 cases and most of liver injuries were managed conservatively. Hepatorrhaphy was done in 15 cases. All renal injury cases were managed conservatively. Drainage procedure was done in 4 patients of pancreatic injury. Our study compared with Raza M et al 2013^[8], Giannopoulos GA et al 2009^[9], Malhotra AK et al 2002^[10] study.

Total 23 patients died in our study. 12 patients belonged to operative group. They died in post operative period, majority of them died due to septicaemia, 11 patients died during resuscitation. Therefore mortality in the present study is 14.6% which is compared with the other published

studies in our country (Khanna et al^[3]). The mortality rate in Di Vincenti et al^[11] study was 23%. Cox et al^[7] study reports mortality of 10% and in Davis et al^[2] study it was 13.3%.

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 accident forms the most common mode of injury. So efforts should be made to bring road traffic regulations into strict action and traffic norms regulated. Well established trauma care centres should be established at every Tertiary hospital. Measures for early transport of the patients from the accident site to the trauma centres should be undertaken. Clinical presentation is varied, sometimes confusing. Blunt injury abdomen is usually less obvious. Hence, repeated examination by multispecialty personnel in a specialized trauma centre is required. Erect abdomen X ray is a useful investigation to identify associated hollow viscus injury. With the advent of high resolution ultrasonography (FAST), DPL and FQA investigations are becoming less opted. Early diagnosis and repeated clinical examination and use of appropriate investigations forms the key in managing blunt injury of abdomen (BIA).

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