Research Paper

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A Study of Blunt Abdominal Trauma Cases and its Management

Medical Science

KEYWORDS : blunt abdominal trauma, prevention, management,young

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ABSTRACT

Blunt abdominal trauma is one of the most common causes among solid organ injuries. Morbidity and mortality in blunt abdominal injuries is major cause of concern for surgeons.

Aims & Objective: *This study was carried out to analyse patient profile, investigations and management of such* ***patients.***

Material and Methods: 100 patients, who admitted to civil hospital Ahmedabad were studied prospectively. Age and gender distribution, Mode of injury, clinical presentation, organs injured, and investigations carried out, length of hospital stay, management – conservative or operative and their outcome were studied.

Results: *Out of 100 patients 65 were male, and 35 female patients. 55% patients are from 20-40 year age group. Majority are due to road traffic accidents (45%), and abdominal pain is the most common mode of presentation. Spleen (46%) and liver (38%) are the 2 most common organs involved. 22% patients are managed conservatively, remaining have to undergo laparotomy. Length of hospital stay (1-10 days in 37 patients) is lower patients who are managed by conservative management in comparison to operative management (11-20 days in 4 patients). 54% patients required 1 or more units of blood during hospital stay.*

Conclusion: *Non penetrating abdominal injuries are major cause of concern. Ultrasonography and CT scan play major role in detecting solid organ injuries.*
Though conservative management is successful in carefully selected patients, operative management remains the main stay of treatment.

Introduction:
Hemoperitoneum is known as presence of blood in peritoneal cavity. Abdominal trauma is essential culprit for Hemoperitoneum. Abdominal trauma is one of the most common causes among solid organ injuries caused mainly due to road traffic accidents. Motor vehicle accidents account for 75 to 80 % of blunt abdominal trauma. Blunt injury of abdomen is also a result of fall from height, assault with blunt objects, etc.**1]**

The morbidity and mortality remains at large due to the prolonged interval between trauma and hospitalization, delay in diagnosis, inadequate and lack of appropriate surgical treatment, post-operative complications and associated trauma especially to head, thorax and extremities. Other factors which influence include hemodynamic instability, associated injuries to other parts of body and Glasgow coma scale.**[4]**

In view of increasing number of vehicles and consequently road traffic accidents, this study has been carried out to study the cases of blunt abdominal trauma resulting in Hemoperitoneum in visceral organ injuries with reference to the patients presenting at Civil hospital, Ahmedabad attached to B.J. Medical College, Ahmedabad with these aims and objectives. To evaluate the impact of blunt abdominal trauma on intraperitoneal organs, to study incidence rate amongst various age group and genders with various modes of clinical presentation, extent of involvement of various visceral organs, various modes of presentation, various modes of management including investigations to detect intra-abdominal injuries and outcomes of conservative and operative management and to study various complications.

Materials and Methods:
100 cases of non-penetrating abdominal injuries were studied prospectively who were admitted in emergency and then shifted to surgery ward after initial resuscitation.

After initial resuscitation of the trauma victims, a careful history was taken to document any associated medical problem. Routine blood tests were carried out in all the patients. Documentation of patients, which included, identification, history, clinical findings, diagnostic tests, operative findings, operative procedures, complications during the stay in the hospital and during subsequent follow-up period, were all recorded on a proforma specially prepared. Demographic data collected included the age, sex, occupation and nature and time of accident leading to the injury.

All patients were thoroughly examined after achieving haemodynamic stability. The decision for operative or non-operative management depended on the outcome of the clinical examination and results of diagnostic tests. Patients selected for non-operative or conservative management were placed on strict bed rest, were subjected to serial clinical examination which included hourly pulse rate, blood pressure, respiratory rate and repeated examination of abdomen and other systems. Appropriate diagnostic tests especially ultrasound of abdomen was repeated as and when required.

Apart from routine investigations, abdomen x ray was done in all 100 patients. Ultrasound of abdomen was done in all 100 cases. CT scan was done in 18 patients in our study.

Results:
Out of 100 patients enrolled in study, 65 were male while 35 female patients were victims of blunt abdominal trauma. Age distribution is shown in Table 1.

Road traffic accidents are major culprit for organ injuries in these patients (45%) followed by assault on victim (30%) and fall from height (20%). Latent period:-more than half patients were brought for treatment within 24 hours of injury while 40% patients were brought for treatment after 24 hours. Most of the patients included in this study have associated injuries such as head injury, spine injury, orthopaedic injuries, etc. are associated in this patients. More than 95% of patient presented with one or more abdominal symptoms, like abdominal pain, vomiting and/or abdominal distension. Other presentations include haematuria, urine retention, deformity and altered consciousness. Different organs injuries found during ultrasonography is shown in Table 2.

SEX DISTRIBUTION

Sex	No. of Cases	% in this study	% in Gupta et al
Male	65	65%	59%
Female	35	35%	41%
Total	100		

ORGANS INVOLVED

	This Study			Gupta et al.	
Organ	No. of Cases	Percentage	Organ	No.of Cases	Percentage
Spleen	36	36%	Spleen	23	46%
Liver	16	16%	Liver	19	38%
Kidney	4	4%	Kidney	3	6%
Instestines	20	20%	Instestines	2	4%
Pancreas	4	4%	Pancreas	1	2%
Mesentry	10	10%	Mesentry	1	2%
Bladder	10	10%	Bladder	1	2%
Total	100			50	

Associated Injuries

Associated injuries	No. of cases	% in this Study	% in Gupta et al.
Head injuries	17	17%	20%
Spine	2	2%	5%
Exterimities	30	30%	26%
Chest	20	20%	18%
Others	5	5%	10%
Nil	26	26%	21%

Discussion:

This study consist of 100 patients who have developed visceral organ injury due to various causes and brought to Civil hospital, Ahmedabad. More than 90% patients are male and majority of patients belongs to third and fourth decade of life. Similar study conducted by Davis et al. in western countries shows road traffic accident is responsible for 2/3 cases of organ injuries in comparison to Indian study done by Gupta et al. shows 1/3 cases involved. This may be due to rapid development in automobile industry giving priority to speed than safety. Latent period is time required for patient to transfer for clinical management from time of injury. This time lag is due to the site of accidents, which are usually rural, and the time taken to transport them to the hospital and is very crucial in management. In our study most of the patients presented within 24 hours of injury, most probably due to improvement in transport and primary health care.

Associated injuries adds more morbidity and mortality due to wide range of injuries. Majority of patients were having associated injuries like orthopaedic fracture (30%) followed by thoracic injuries(20%). Associated extra abdominal injuries were found in 74 cases. Injuries were like extremity fractures, pelvic fractures, head injuries and chest injuries including rib fractures. The above table shows the comparison of the present study incidences of associated injuries with other studies.

In the present study, abdominal pain was the most common complain accounting for almost all cases. But the signs and symptoms in abdominal injuries are notoriously unreliable and are often masked by concomitant head injuries, chest injuries and pelvic fractures. Significant injuries to the retroperitoneal structures may not manifest signs and symptoms immediately and be totally missed even on abdominal x-rays. In Davis et al study, 43% of patients had no specific complaints and no signs or symptoms of intra-abdominal injury when they first presented to the emergency room. But 78% of those patients eventually required exploratory laparotomy.

All 100 patients were subjected for ultrasound examination. Ultrasound is more reliable in detecting solid organ injuries and free fluid in the abdomen. Emergency ultrasonography was found to be highly accurate and reliable mode of detecting solid organ injuries and hemoperitoneum.**[7]** In this study, the in non -penetrating abdominal injuries detected by ultrasound is about

57 %. Spleen (36%) was the most common organ followed by intestines (20%), liver (16%). Isolated pancreatic injuries are very rare only in 4% of patients. Combined injuries were found in 6% of patients. In previous studies it was found that spleen and liver are 2 most common organs injured during blunt abdominal trauma.**[3,5.6,11,12]**

In present study 22% of patients were managed with conservative management out of which 4 patients went for exploratory laprotomy and 18 discharged after conservative management and 78% of patients require laprotomy. In Gupta et al. study of 63 patients, 43 patients underwent exploratory laprotomy and 20 patients were treated conservatively.

Increased trend towards conservative management is also reflected in other studies.**[5,9,10]** This was due to earlier trend of operative management due to unavailability of better imaging and risk of missed injuries. Non operative management is gaining increasing acceptance mainly because of the easy availability of better imaging modalities like Ultrasound and CT scan. Minor lacerations and capsular tears, difficult to diagnose clinically can be easily demonstrated by CT scan and selected for non-operative management. Though conservative management is successful in carefully selected patients, operative management remains the main stay of treatment. Around 20 out of 100 patients develop complications following exploratory laprotomy like fever, jaundice, wound infection, intraperitoneal infections, paralytic ileus or renal failure. In Gupta et al. study 10 out of 63 developed infections.

MORBIDITY AND MORTALITY:

A total of nine patients died in the present study. Six patients belonged to operative group and died in the post operative period, majority of them died due to peritonitis and septicemia following bowel injury and splenic injury. Three patients died before surgery due to severe head injury. This is due to delayed primary treatment.

The mortality rate in this study is 9%. As compare to Gupta et al. study(1996) in which 10% mortality rate was present.

CONCLUSIONS:

Blunt abdominal trauma abdomen is a major cause of morbidity and mortality in young and economically productive age-group. Road traffic accident is the major causative agent. Availability of emergency resuscitation and trauma care services, especially near highways helps in lowering the mortality. With investigations like ultrasonography and computed tomography scan, it become easy to decide for conservative or operative line of management. Conservative line of management is safe and effective in a hemodynamically stable patient without any signs of peritonitis otherwise operative line of managent remains the main stay of treatment.

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