Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)

A Unit of Scholars Academic and Scientific Society, India
www.saspublisher.com

Surgery

To Study the Incidence of Various Intra-Abdominal and Extra-Abdominal Injuries in Blunt Abdominal Trauma at Tertiary Care Centre of Central India

Dr. Manish Patel[1], Dr. Ravi Gupta[2*], Dr. Nikhil Khantal[3]
[1]Professor, Index Medical College Hospital & Research Centre, Indore, Madhya Pradesh, India
[2,3]PG Resident, Index Medical College Hospital & Research Centre, Indore, Madhya Pradesh, India

Original Research Article

***Corresponding author**
Dr. Ravi Gupta

Article History
Received: 08.07.2018
Accepted: 18.07.2018
Published: 30.08.2018

DOI:
10.21276/sjams.2018.6.8.31

Abstract: Blunt abdominal trauma (BAT), a common form of trauma, is one of the major causes of morbidity and mortality. The study was aimed at finding the incidence of various intra-abdominal and extra-abdominal injuries in blunt abdominal trauma at Tertiary Care Centre of Central India. The present study includes 80 cases of blunt abdominal trauma admitted to Index Medical College Hospital & research Centre, Indore can be summarized as follows: In Intra-abdominal body region injuries Majority: 21 out of 80 patients (26.25 %) of small intestine most common injury & 18 out of 80 patients (22.5 %) of spleen in BAT patient. In Extra-abdominal body region injuries Majority: 18 out of 80 patients (22.5 %) of Extremity injury most common, 14 out of 80 patients (17.5 %) of Fracture ribs, and 14 out of 80 patients (17.5 %) of fracture pelvis.
Keywords: Intra-Abdominal, Extra-Abdominal, BAT (Blunt Abdominal Trauma) & Injuries.

INTRODUCTION

Blunt abdominal trauma has become frequent in our society. It may be accidental, suicidal and homicidal also however, first one is very frequent, and all can lead to death. Injury by blunt object group include patient who sustained injury due to assault by fists and blows, lathi, iron rods/kicks or received accidental animal kicks over abdomen or got injured due to fall of some heavy object like log ,gravel, got buried in mine or had rolled down the stairs or stumbled over some blunt object[1-3].

Blunt abdominal trauma (BAT), the third most common form of trauma worldwide, is a major cause of morbidity and mortality [4]. Road traffic accidents, falls, assaults still remain the most common causes of BAT. In children, child abuse and trauma secondary to recreational activities such as cycling, roller skating, horse riding etc. are additional causes of BAT. Rare causes of BAT include iatrogenic trauma during cardiopulmonary resuscitation, manual thrust to clear airway and the Heimlich maneuver.

Virtually no intra-abdominal viscera are spared from injury due to BAT and the spectrum varies from trivial to catastrophic life threatening injuries.

Spleen is the intra-abdominal organ most commonly injured after BAT followed by liver and small bowel. Kidneys, ureters and urinary bladder are also injured after BAT and 70% of cases of bladder rupture are associated with pelvic fractures. Injuries to colorectum, diaphragm, stomach and pancreas have also been reported after BAT [2].

Blunt force injuries to the abdomen can generally be explained by three mechanisms, when deceleration causes differential movement among adjacent structures, as a result shear forces are created and cause hollow and solid viscera and vascular pedicles to tear, especially at relatively fixed points of attachment. Intra-abdominal contents can also get crushed between anterior abdominal wall and the vertebral column or posterior thoracic cage. This produces crushing effect to which solid viscera are especially vulnerable. External compression forces that result in sudden rise in intra-abdominal pressure can result in rupture of hollow viscus[3].

Evaluation of patients with BAT is a challenging job for a surgeon. Proper early diagnosis and initial resuscitation is beneficial in having a good outcome. Physical examination remains the initial step in diagnosis but due to its proven inconsistency especially in children, patients under the effect of alcohol, or in patients with concomitant injuries to head and spine various diagnostic

Modalities have been employed to assist the trauma surgeon in diagnosis of abdominal injuries [5]. In haemodynamically stable patients with reliable physical examination, clinical findings may be used to select patients who may be observed safely. In the absence of reliable physical examination, diagnostic choice is between Focused Abdominal Sonography in Trauma (FAST) (with CT in complementary role) and computed tomography (CT) alone. Haemodynamically unstable patients may be initially evaluated with FAST or Diagnostic Peritoneal Lavage (DPL) with need for urgent exploratory laparotomy [6].

Blunt abdominal trauma is quite common since previous time and increasing day by day in emergency clinics. Many of time this injury is life threatening and require urgent treatment.

Keeping all this in view, this study was conducted at Index Medical College Hospital & Research Centre, Indore India. The study was aimed at the study of the incidence of various intra-abdominal and extra-abdominal injuries in blunt abdominal trauma at Tertiary Care Centre of Central India.

MATERIALS & METHODS

This study carried out in the Department of Surgery**,** Indore both retrospectively and prospectively in patients with Blunt abdominal trauma over the period of 01 year co-operation of the staff of (1) Medicolegal section (2) Central record room and the help of the residents looking after the admitted patients. The study comprises 12 months (1/1/2017 to 31/12/2017).

The present study include 80 cases of blunt abdominal trauma admitted to Index Medical College Hospital & research Centre, Indore On admission to hospital patient s name, age, sex, address, registration number, and, date and time of admission, length of delay in treatment taken noted and Nature of weapon also noted.

Injury by blunt object group include patient who sustained injury due to assault by fists and blows, lathi, iron rods/kicks or received accidental animal kicks over abdomen or got injured due to fall of some heavy object like log ,gravel, got buried in mine or had rolled down the stairs or stumbled over some blunt object.

Patient who reported to hospital with history of blunt abdominal trauma but on examination showed no distant symptoms and sign of abdominal injury and/or give conservative line of treatment, and in due course showed improvement, without any deterioration and not admitted in hospital are excluded from study.

This series includes all homicidal, suicidal and accidental, blunt abdominal traumas. Of those who were admitted, the records were collected from the central record room and ward paper were also studied .operative notes and R.S.O.'s note.

In all cases, an appropriate primary survey of the patients was done and resuscitation initiated. A detailed history, especially history with particular reference to mode of injury was taken with information provided by the patient, relatives of the patient and witnesses of accidents. Detailed history included time elapsed since injury, presenting symptoms especially abdominal and history of allergies, medications, past medical history, last meal or oral intake and events leading to presentation. Resuscitation was continued concomitantly while a detailed physical examination was done for identification of all injuries.

Detailed physical examination was the mainstay to identify patients who required urgent laparotomy from those who could be observed safely, investigated to clinch a diagnosis and plan further management. Detailed physical examination included primary survey (general condition of the patient, pulse rate, blood pressure, respiration, hydration, and pallor/cyanosis) and systemic examination.

Conventional radiology (chest x-ray, abdominal x-rays erect/decubitus) and supine along with emergency investigations such as haemoglobin (Hb) total leukocyte count (TLC), random blood sugar (RBS) blood urea, serum creatinine, blood grouping and cross match, electrocardiogram (ECG) were done.

Patients whose examination revealed signs of overt peritonitis with uncontrolled shock not attributable to other extra-abdominal injury/injuries (PR >100/min, BP <90 mmHg on fluid challenge /resuscitation) were urgently taken up for exploratory laparotomy.

Patients who had sustained BAT with pneumoperitoneum on CXR/AXR erect/decubitus, suggestive of hollow viscus injury were also subjected to exploratory laparotomy. In all other patients of BAT with suspected injuries to intra-abdominal viscera, focused abdominal sonography in trauma (FAST-ultrasound imaging Morrison's Pouch, pouch of Douglas, perisplenic and pericardium for free fluid) was done. Haemodynamically unstable patients with positive FAST examination and no clinical features of peritonitis were also taken up for surgery [7]. CT abdomen and pelvis (plain as well as contrast) was done in haemodynamically stable patients with positive FAST examination or in patients in whom FAST examination was negative or indeterminate but suspicion of injury to intra-abdominal viscera was present. On CT abdomen and pelvis 10 mm sections were taken from the top of diaphragm to pubic symphysis after administration of oral and intravenous contrast. Injuries reported on CT were taken into consideration while planning further management.

Haemodynamically stable patients with solid visceral injuries were considered for non-operative treatment provided they did not have concomitant intra or extra-abdominal injury requiring surgery. If during course of non-operative treatment, they developed haemodynamic instability then they were considered for laparotomy[8].

The external injury was noted in detail and finding such as surgical emphysema, active bleed peritoneal/pleural breech, evisceration, guarding& rigidity in abdomen on palpation were recorded. Abdominal injuries were managed by appropriate method of repair, while other injuries and general status of the patient was simultaneously taken into account.

Few patients with suspected to, blunt trauma to chest , abdomen and pelvic region were subjected to following investigation X-ray chest, X-ray abdomen, usg chest and abdomen computed tomography and color Doppler if needed to reveal diagnosis .

The decision of tube thoracostomy was taken clinical signs & symptoms and on X-ray chest when it is possible shoes confirm hemothorax or pneumothorax etc. When the decision for exploratory laparotomy was taken on the basis of following indications patient was prepared for same and the preoperative management consisted of proper amount of intravenous fluids, blood transfusions, broad spectrum antibiotics, nasogastric tube and maintaining the input-output chart.

Same steps were taken for the patients who were observed and kept on conservative line of management and in them maintenance of intravenous fluid were slowly withdrawn as the bowel sounds and other signs improved.

RESULTS

Table-1: Incidence of intra-abdominal injuries

Internal Organ Injuries	No. of Patients	Percentage (%)
Liver	14	17.5
Small intestine	21	26.25
Colon	07	8.75
Spleen	18	22.5
Hemoperitoneum	20	25
KUB	11	13.75
Stomach	05	6.25
Other(Pancreas, Mesentery)	09	11.25

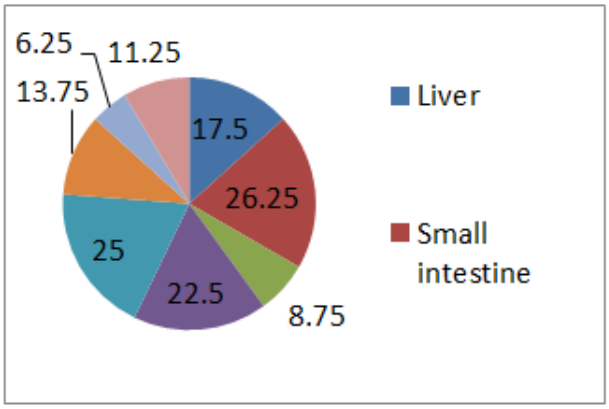

Fig-1: Incidence of intra-abdominal injuries in (%)

Table-2: Incidence of extra-abdominal injuries

EXTRA-ABDOMINAL INJURIES	No. of Patients	Percentage (%)
Head Injury	11	13.75
Spine Injury	05	6.25
Fracture Ribs	14	17.5
Lungs (Haemothorax, Pneumothorax)	07	8.75
Facial	12	15
Fracture Pelvis	14	17.5
Extremity (Fracture Limbs)	18	22.5

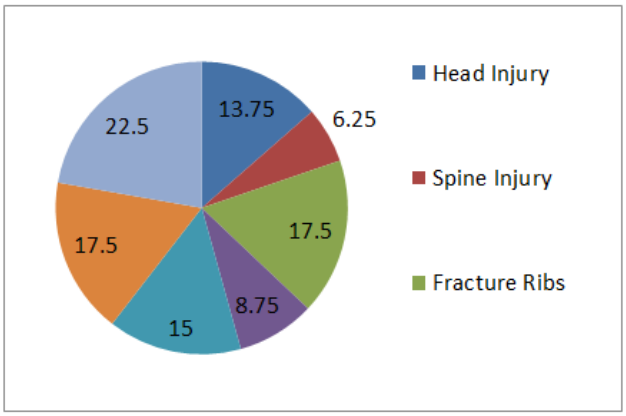

Fig-02: Incidence of extra-abdominal injuries in (%)

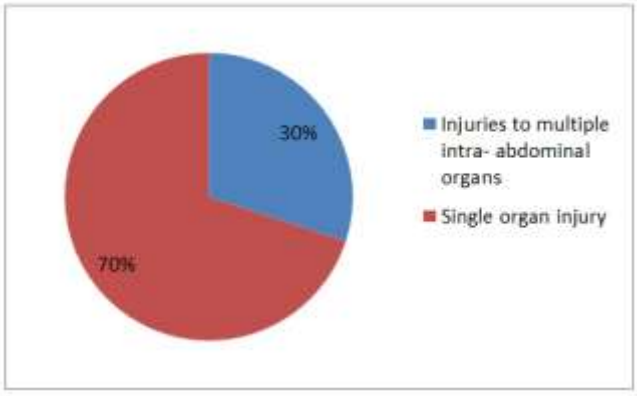

Fig-03: Pattern of injuries to intra-abdominal organs (n = 80)

The patterns of injuries to intra-abdominal organs were shown in Figure 03. 24 (30%) patients were injured single intra-abdominal organs while injuries to multiple intra-abdominal organs were present in 56 (70%) patients.

Spleen		Liver	Small bowel	Colon	Stomach	KUB	Mesentry
Fracture ribs (n = 14)	05	03	02	02	01	-	01
Fracture pelvis (n = 14)	04	03	-	01	-	05	01
Fracture long bones (n = 18)	08	04	03	01	01	-	01
Head injury (n = 11)	05	02	01	01	-	01	01
Spine injury (n = 5)	01	-	-	01	-	03	-

DISCUSSION

A prospective study of 80 cases of BAT was conducted in the department of Surgery, IMCHRC, Indore, and Madhya Pradesh, India during the period of one year from 1st Jan to 31st Dec 2017.

Internal organ injury

In Intra-abdominal body region injuries Majority: 21 out of 80 patients (26.25 %) of small intestine most common injury & 18 out of 80 patients (22.5 %) of spleen in BAT patient.

Extra-abdominal body region injuries

In Extra-abdominal body region injuries Majority: 18 out of 80 patients (22.5 %) of Extremity injury most common, 14 out of 80 patients (17.5 %) of Fracture ribs, and 14 out of 80 patients (17.5 %) of fracture pelvis.

CONCLUSION

In Intra-abdominal body region injuries Majority: 21 out of 80 patients (26.25 %) of small intestine most common injury & 18 out of 80 patients (22.5 %) of spleen in BAT patient.

In Extra-abdominal body region injuries Majority: 18 out of 80 patients (22.5 %) of Extremity injury most common, 14 out of 80 patients (17.5 %) of Fracture ribs, and 14 out of 80 patients (17.5 %) of fracture pelvis.

Most extra-abdominal body region injuries are managed conservatively.

REFERENCES

1. Mehta N, Babu S, Venugopal K An experience with blunt abdominal trauma: evaluation, management and outcome 2014 Jun 18;4(2):599.
2. Jones EL1, Stovall RT, Jones TS, Bensard DD, Burlew CC, Johnson JL, Jurkovich GJ, Barnett CC, Pieracci FM, Biffl WL, Moore EE Intra-abdominal injury following blunt trauma becomes clinically apparent within 9 hours. 2014 Apr;76(4):1020-3.
3. Arikanoglu Z, Turkoglu A, Taskesen F, Ulger BV, Uslukaya O, Basol O, Aldemir M. Factors affecting morbidity and mortality in hollow visceral injuries following blunt abdominal trauma.14;165(1):23-6.
4. Hoyt DB, Combra R, Winchell RJ. Management of acute trauma. In: Townsend CM, Beauchamp RD, Evers BM, Mattox KL Eds. Sabiston Textbook of Surgery 16th Edition. Philadelphia: WB Saunders; 2001: 311-344.
5. Talton DS, Craig MH, Hauser CJ, Poole GV. Gastroenteric injuries from blunt trauma. Am Surg. 1995;61:69-73.
6. Hoff WS, Holevar M, Nagy KK, Patterson L, Young JS, Arrillaga A, Najarian MP, Valenziano CP. Practice management guidelines for the evaluation of blunt abdominal trauma: the East practice management guidelines work group. Journal of Trauma and Acute Care Surgery. 2002 Sep 1;53(3):602-15.
7. Al-Hassani A1, Tuma M, Mahmood I, Afifi I, Almadani A, El-Menyar A, Zarour A, Mollazehi M, Latifi R, Al-Thani H. Dilemma of blunt bowel injury: what are the factors affecting early diagnosis and outcomes 2013 Sep;79(9):922-7.
8. Balcioglu ME1, Boleken ME1, Cevik M1, Savas M2, Boyaci FN. Blunt renal trauma in children: a retrospective analysis of 41 cases. 2014 Mar;20(2):132-5.