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TO STUDY THE RISK FACTORS ASSOCIATED WITH MORTALITY AND MORBIDITY IN BLUNT ABDOMINAL TRAUMA CASES IN A TERTIARY CARE HOSPITAL

General Surgery

Dr. Kalagoni Durga Bhavani	Jr3
Dr Vikas Sushil Tiwari	Jr1
Dr. Pruthvi Kurapati	Jr1
Dr. Navendu Mohan.	Assistant Professor
Dr. Janardhan Prasad Ghildiyal	Professor
Dr. Rohit Singh.	Assistant Professor
Dr Nadeem Ahmad*	Associate Professor *Corresponding Author

ABSTRACT

Any use of physical force, such as in assault or traffic accidents (RTAs), frequently results in health issues for the victim; this area of medicine is referred to as trauma. It is the world's largest cause of mortality and disability, particularly in underdeveloped nations. Additionally, it is responsible for the bulk of deaths among those under 45. Since this is the working population, it impedes the country's overall growth and development in an indirect manner. As the world undergoes significant urbanisation, motorisation, and industrialisation, the prevalence of such life-threatening trauma has dramatically increased over the past several decades. Trauma has drawn the attention of medical specialists since India, a developing nation, is also going through these changes. It is significant in this regard as RTAs have emerged as the primary public danger, posing one of the biggest risks to public safety and human life. India is the nation with the highest number of RTA-related fatalities.

KEYWORDS

Blunt Trauma Abdomen, Road Traffic accident, Blunt injury, Primary Closure, CECT Abdomen

INTRODUCTION

Trauma is a worldwide epidemic that claims the lives of over 5 million people year and accounts for 9% of all deaths worldwide—nearly 1.7 times as many people as die from HIV/AIDS, TB, and malaria put together. [1] Low and middle-income nations account for 90% of all trauma deaths worldwide. India's 30-day trauma-related mortality rate is double that of high-income nations, and despite advancements in imaging and medical technology, the in-hospital mortality pattern hasn't changed in the past ten years. [2] The third most wounded part of the body is the abdomen, which is impacted in 7–10% of trauma victims. Blunt abdominal trauma accounts for 85% of all injuries. [3] BAT, or blunt abdominal trauma, can occur alone or in conjunction with other traumas. Trauma sufferers' morbidity and death can be greatly increased if BAT is not identified and sought after. [3] A clinical evaluation by itself is typically insufficient since the examining physician may be distracted by other evident injuries or by the related change in mental status brought on by shock or a head injury. BAT is most frequently caused by attacks, falls, and auto accidents. [3] Although any internal organ can be harmed by physical trauma to the abdomen, the liver and spleen sustain the most damage. [4] The successful treatment of BAT victims depends on a number of parameters, including timely resuscitation, evaluation of all injuries and their severity using several diagnostic methods, and determination of whether or not surgical management is necessary. Risk factors for morbidity and mortality must be methodically found and investigated in order to reduce morbidity and mortality in cases of abdominal trauma. In order to determine the risk factors linked to death and morbidity in cases of blunt abdominal trauma in a tertiary care hospital, the current study was carried out.

MATERIAL AND METHODS:

It was a Prospective study conducted at tertiary care hospital. A total of 60 patients were selected by simple random sampling method.

Inclusion Criteria

- Patients presenting with history of recent assault by blunt and heavy object over abdomen.
- Road traffic accident with suspected blunt abdominal injury.
- History of fall from height.
- Polytrauma patients in whom there is clinical suspicion of blunt trauma to abdomen.
- Blunt abdominal trauma in sports injury.

Exclusion Criteria

Patients with penetrating and stab and injuries.

Data Collection

After approval from Ethical Committee and obtaining informed consent from the patients relatives the patients were initially admitted in trauma ward and stabilized. After admission, data for study was collected by direct interview with patient or patient relatives accompanying the patient and a relevant history of the nature of accident, time of occurrence and injuries sustained were noted. Thorough clinical examination and clinical findings and relevant diagnostics. investigation performed over patient. Details of external, skeletal and other associated injuries were noted after clearing the airway. Breathing and ventilation were maintained by positioning, oxygenation, intubation and ventilation. Simultaneously Intravenous

access was achieved, blood sample was collected and sent for routine investigations. X-rays of abdomen, chest with both domes of diaphragm to rule out free gas under diaphragm. Other relevant x-rays were taken to rule out any fracture or dislocation. A four quadrant abdominal tap was done to look for hemoperitoneum or fecal contamination wherever indicated. Tap was considered positive if blood was aspirated which did not clot. An ultrasound examination or CT scan of abdomen was carried out in cases which were stable hemodynamically if, organ injury suspected inspite of a negative abdominal tap. In patients with no local signs of trauma but intra-abdominal injury could not be ruled out, laparotomy was done as early as possible. The procedure done varied as per the findings. Complications like postoperative septicemia, wound infection, chest infection were recorded and dealt with accordingly. Drains were removed on fifth postoperative day, when they stopped draining. Suture removal was done on tenth postoperative day. In patients who expired, an autopsy was conducted in to ascertain the exact cause of death.

Statistical Analysis:
IBM SPSS Ver. 28 was used to calculate statistics. Microsoft Excelbook 2021 was used to prepare tables and graphs. P value < 0.05 was set for significance.

RESULTS

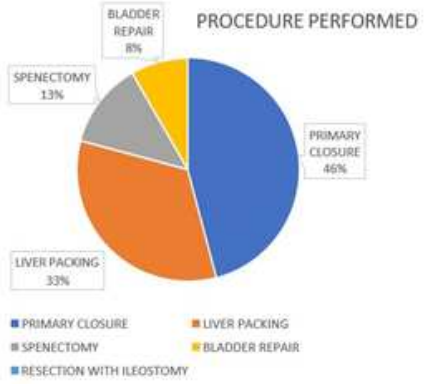
The most common age group was between 15- 30 years. The mean age of the study subjects was 30.7±16.09 years. Majority of the subjects were male i.e. 83.33% with male: female ratio of 5:1. Most common mode of injury was vehicular accident (70%) followed by fall from height (18.33%) and assault (11.67%). The mean duration of injury was 20.95±23.61 hours. The mean GCS of the subjects was 14.7±0.7 in our study. Solid organ injury (35%) was the most common finding in study subjects with organ injury with liver injuries making most of it. The most common grade of injury was no SOI (71.67%) followed by grade 3 (15%) and grade 2 (8.33%). Amongst 60 study subjects 25 (41.67%) required procedure. Most common procedure done was primary close 11 (44%) followed by liver packing 8 (32%), splenectomy 3 (12%), bladder repair 2 (8%) and resection with ileostomy 1 (4%). About 20% suffered complications among which chest infection 8 (66.67%) was the most common complication followed by bile leak 2 (16.67%), death and wound infection 1 (8.33%) each. We found mortality rate of 1.67% in our sample

Table 1: Factors Associated With Outcome Of The Cases.

Factors	Mortality No. of cases / Mean	%	Survived No. of cases / Mean	%	P value
Age	30	--	30.71	16.23	--
Female	0	0	10	16.95	0.65
Male	1	100	49	83.05	
Duration	24	--	20.90	23.81	--
Hematuria	0	0	4	6.78	0.79
Tachycardia	1	100	45	76.27	0.58
Hypotension	1	100	16	27.12	0.11
Tachypnea	1	100	5	8.47	0.002**
Tenderness	1	100	53	89.93	0.74
Guarding	1	100	35	59.32	0.41
Rigidity	1	100	15	25.42	0.09
GCS	13	--	14.73	0.67	--
Complication	1	100	11	18.64	0.04*
Chest injury	0	0	5	8.47	0.76
Solid organ injury	0	0	21	35.59	0.46
Liver laceration	0	0	11	18.64	0.63
Spleen laceration	0	0	8	13.56	0.69
Genitourinary	0	0	4	6.78	0.79
GIT	1	100	10	16.95	0.03*
Abdominal tap	1	100	2	3.39	<0.01*
Vertebral injury	0	0	0	0	--
Head injury	0	0	2	3.39	0.85

Table 2: Table 2: Factors Associated With Morbidity Of The Cases

Factors	Mortality No. of cases / Mean	%	Survived No. of cases / Mean	%	P value
Age	30.71	16.27	30.67	16.08	0.99
Female	0	0	10	20.83	0.08
Male	12	100.00	38	79.17	
Duration	18.50	8.66	21.56	26.08	0.69
Hematuria	0	0	4	8.33	0.30
Tachycardia	12	100.00	34	70.83	0.03*
Hypotension	4	33.33	13	27.08	0.67
Tachypnea	4	33.33	2	4.17	0.002*
Tenderness	12	100.00	42	87.50	0.17
Guarding	11	91.67	25	52.08	0.01*
Rigidity	4	33.33	12	25.00	0.5
GCS	14.67	0.65	14.71	0.71	0.8
# pelvis	0	0	0	0	--
Chest injury	3	25.00	2	4.17	0.01*
Solid organ injury	6	50.00	15	31.23	0.22
Liver laceration	4	33.33	7	14.58	0.13
Spleen laceration	2	16.67	6	12.5	0.70
Genitourinary	0	0	4	8.33	0.30
GIT	4	33.33	7	14.58	0.13
Abdominal tap	2	16.67	1	2.08	0.03*
Vertebral injury	0	0	0	0	--
Head injury	0	0	2	4.17	0.47



DISCUSSION

WHO reported that trauma affects all age groups but have a particular impact on youth in their prime working years and that road traffic injuries are the leading cause of death worldwide in the age group of 15-29 years.[1] In the present study, most cases of BAT were seen among 15-30 years old. Davis et al also reported 43% of BAT in this age group while Kulkarni et al reported 47.1%.[4,5] Author found a male preponderance (83.33%) as has been reported by Mehta et al (79%), David et al (70%) and Kulkarni et al (94%).[4-6] Authors found road traffic accidents as the etiological factor in 70% of BAT. Other studies have also reported it to be the prime cause of BAT, e.g. Davis et al (70%), Kulkarni et al (59%), Mehta et al (53%) and Karamercan et al (87.5%).[3-6] Increasing urbanization and motor vehicles combined with poor road conditions and bad traffic discipline is adversely affecting the young males who are usually the bread earners in any family.

Though authors performed FAST as a routine in all BAT cases, all stable cases underwent CT scan of whole abdomen. Though studies have found FAST to be a fast and reliable bedside tool in diagnosing BAT, a negative FAST without CT can miss intra-abdominal injuries.[7-9] Secondary or a repeat detailed ultrasound has been added to FAST in a stable patient to increase the sensitivity of FAST but a review by Stengel et al did not find evidence to support emergency ultrasound based algorithms for diagnosing BAT.[10,11] CT scan is now essential in the evaluation of BAT if the patient condition is stable enough and forms the baseline in NOM. CT is also being done in hemodynamically unstable patients by maintaining aggressive resuscitation schemes and Ordonez et al reported that CT scan was attainable in 47% of these patients and avoided surgery in 54% with no added mortality.[12]

Solid organs are injured the most in BAT. Liver was injured in 33.22 followed by GIT in 31.53% cases while spleen in 26.06% of the present BAT series. Ravikanth, et al found liver injury in 26% while splenic injury was reported in 20%.[13] Other studies have reported spleen to be the most injured organ in BAT followed by liver, as has been shown

by Parreira et al (45.3% and 44%) and Mehta et al (53% and 35%).[6,14]

Indications for surgery included persistent hemodynamic instability and features of peritonitis. All bowel injuries were operated upon as were urinary bladder injuries. Diaphragmatic injuries were diagnosed radiologically or on laparoscopy. Authors did laparoscopic evaluation in nine patients who had uncertain picture on clinico- radiological assessment. Laparoscopic evaluation is being accepted as an effective way to reduce non-therapeutic laparotomies and improve perioperative outcomes in hemodynamically stable patients.[15] Raza et al has reported complete success rate in stable isolated liver injuries.[16] Gaspar et al had 50% success rate with NOM and it was independent of the liver injury grade.[17] Mesenteric injuries were either diagnosed on CT scan or was suspected when free intraperitoneal fluid was noticed in the absence of any obvious solid or hollow viscus injury.[18] In our study an overall mortality of 1.67% which is comparable to studies by Karamercan (15.2%) and Kulkarni et al (14.7%).[3]

CONCLUSION:

Mortality and morbidity due to blunt abdominal trauma can be reduced by simple measures like:

- Better pre hospital care in the form of rapid transport to the hospital from the accident site by well equipped ambulance.
- Training of personal for field intervention.
- Early stabilization of the patient after admission in the hospital.
- Thorough clinical examination and timely monitoring of the patients.
- Well equipped specialized trauma care centre with trained medical and paramedical staff on duty round the clock with proximity to departments such as radiology , blood bank
- Early diagnosis and laparotomy procedures to the required cases.
- Occasionally it is difficult to determine the source of bleeding in the shocked, multiple injured patients. If doubt still exists, especially is the presence of other injuries, a laparotomy may still be the safest option.

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