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"A Clinical Study on Blunt Abdominal Trauma Patients Presenting In a Tertiary Care Centre"

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ABSTRACT:-

Background: - Blunt trauma abdomen is a common surgical emergency. It may present as an isolated problem or as a part of polytrauma. Road traffic accident (RTA) is the most common cause of blunt trauma abdomen. Males are usually more associated than females. Immediate, prompt resuscitation & further management is always needed for saving life and prognosis.

Methods: - After initial resuscitation, and stabilizing the patients, thorough history taking & clinical assessment done. Decisions were made for further investigations & 4 quadrants aspirations etc. Relevant radiological investigations were done. Decision regarding operative or non operative management was taken after clinical assessment & radiological findings.

Results: - This is a clinical study of 100 patients, who were admitted, treated and followed up in Silchar Medical College and Hospital, Silchar, Assam, India from 1st January 2022 to 31st December, 2022. In this study, the incidence of blunt trauma abdomen was found to be 72.18 % out of all abdominal trauma patients. The most common cause was found to be road traffic accidents (69 %). The commonest age group was 21 to 30 years comprises about 31 % of patients. Males were more common than females. Spleen was the most common organ involved (34 %). A total of 54 patients having blunt trauma abdomen were managed conservatively. Out of 46 patients managed operatively, 44 patients recovered & 2 patients expired making overall mortality rate of 2%.

Conclusion: - Patients with blunt trauma abdomen should have early & accurate diagnosis, with immediate & prompt management for better prognosis.

Keywords: - Blunt trauma abdomen, road traffic accidents, males, Spleen, Males, Liver.

I. INTRODUCTION:-

Abdominal trauma constitutes around 1% of trauma patients. Blunt trauma abdomen (BTA) is a common surgical emergency which may present as an isolated problem or as a part of polytrauma. Road traffic accident (RTA) is the most common cause of blunt trauma abdomen. Blunt trauma abdomen can result from deceleration, crushing or external compression mechanism. Physical examination of abdomen alone is unreliable for decision making in blunt trauma abdomen. Few main reasons being the presence of distracting injuries, an altered mental state, and coexisting drug and alcohol intoxication in patients. Different diagnostic modalities in abdominal injuries include diagnostic peritoneal lavage (DPL), focused assessment sonography for trauma (FAST), and computerized tomography (CT) scan are available. If these facilities are not available then its better to open the abdomen than to wait in a deteriorating patient. The initial hours are very crucial for the patients, concealed hemorrhage & missed abdominal trauma are often cause of morbidity & mortality in early & late stages. Strict supervision and early institution of proper management results in decreased morbidity and mortality. The care of the trauma patient is demanding and requires dedication, diligence and efficiency. Evaluation and diagnosis of a patient of blunt trauma abdomen remains one of the most challenging aspect of acute trauma care. RTA is the most common cause of admissions in the surgical ward of this hospital following trauma. Among these, blunt trauma abdomen cases arequite frequently encountered. In the management of blunt trauma abdomen, the decision to go for emergency exploratory laparotomy is very crucial.

II. METHODS:-

After initial resuscitation and achieving hemodynamic stability, all patients were subjected to careful history and clinical examination. Depending on the clinical findings, decision for further investigations as four quadrant aspirations, X-ray chest and abdomen erect view and abdominal ultrasound were taken. USG FAST is done in all patients irrespective of hemodynamic stability.

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Routine blood and urine tests were carried out in all the patients.

The decision to operate or non-operative management depended on the outcome of clinical examination and results of diagnostic tests. For those who needed operative management, suitable and necessary surgical procedures done & proper post operative care taken. Patients selected for non-operative or conservative management were placed on strict bed rest, 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, were repeated as and when required.

III. RESULTS:-

Blunt trauma Abdomen (BTA)	72.18
Penetrating trauma Abdomen (PTA)	27.82

Fig:- Out of all abdominal trauma patients, reporting to SMCH Casualty department in our study period, 72.18 % cases were found to be having BTA, while 27.82 % cases were having PTA.

Age (Years)	No. of Patients (%)		
	RTA	Fall	Assaults
≤10 (n=4)	3 (37.5)	5 (62.5)	0 (0.0)
11-20 (n=26)	11 (55)	9(45)	0 (0.0)
21-30 (n=36)	23 (74.19)	7(22.58)	1 (3.22)
31-40 (n=21)	21 (77.77)	6 (22.22)	0 (0.0)
>40 (n=13)	11 (78.5)	2(14.2)	1(7.14)
Total =100	69 (M: F = 61:8)	29(M: F = 25.54)	2 (M: F = 2:0)

Fig:- Mode of injury, age & sex distribution.

In our study of 100 patients with blunt trauma abdomen, the most common age group was found to be between 21 to 30 years (31 %).Only 8 patients were below 10 years of age. Males (M) were affected 7 times more common than females (F). About 88% of the patients were males and 12% were females. Road traffic accident was the commonest mode of trauma accounting for (69%) of cases followed by fall from height (29%) and least caused by the assault (2%).

Organ injured	Percentage
Spleen	34 %
Liver	25 %
Bowel	20 %
Mesentery	9 %
Urinary Bladder	5 %
pancreas	2 %
Others/ Multiorgan Injury	10 %

Fig:- Organs injured & their percentage in total patients.

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Most common organ injured is Spleen following BTA (34%) , followed by Liver (25%), Bowel (20%), Mesentery (9%) injuries are also encountered frequently following BTA.Urinary bladder (5%), Pancreas (2%) & certain other retroperitoneal injuries also noted. Other discipline injuries/ Multi organ involvements seen in 10% of patients.

SOLID ORGAN	SPLEEN		LIVER	
	NOM	OM	NOM	OM
Grade I	15	0	11	0
Grade II	8	0	5	0
Grade III	5	1	4	1
Grade IV	0	3	0	2
Grade V	0	2 (1 expired)	0	2 (1 expired)
Total	34		24	

Fig: - Grading of Spleen & Liver injuries, their type of management. (NOM= non operative management, OM=operative management).

Out of 34 Splenic injury patients 15 were in AAST grade I, 8 were in grade II, 6 were in grade III, 3 were in grade IV, 2 were in grade V. All grade I & II, 5 out of 6 grade III patients were managed conservatively and had good prognosis over time .One grade III, all grade IV & all grade V patients were operated and out of which 1 expired. Few of them needed ventilator support, ICU care and prolonged hospitals stay.

Out of 25 Liver injury patients, 11 were in grade I, 5 were in grade II, 5 were in grade III, 2 were in grade IV, 2 were in grade V. All grade I & II, 4 out of 5 grade III patients were managed conservatively and had good prognosis over time. One grade III, all grade IV & all grade V patients were managed operatively and out of which 1 expired, few of them needed ICU care & prolonged hospital stay.

Procedure	Number
Splenectomy	5
Splenorrhaphy	1
Hepatorrhaphy	3
Haemostatic packing with gel foam (Liver)	2
Primary Bowel perforation repair/ Resection & Anaastomosis	18
Mesentery repair	9
Others	8

Fig: - The various procedures that were performed in those who needed operative management.

The various operative procedures performed were:-

Splenectomy in 5 cases, Splenorrhaphy in 1 case, Hepatorrhaphy in 3 cases. Haemostatic Liver packing with gel foam in 2 cases, Primary bowel perforation repair / Resection & anastomosis in 18 cases, Mesenteric repair in 9 cases, other procedures in 10 cases.

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COMPLICATIONS	NUMBER	PERCENTAGE
Wound Infection	13	28.26 %
Pleural Effusion & Respiratory Complications	9	19.5 %
Anastomosis leak	5	10.8 %
Left lower lobe atelectasis	3	6.5 %
Mechanical ventilation & Others	2	4.34 %

Fig:- Various complications noted post operatively.

Out of 46 patients those undergone operative procedures, significant complications were recorded in 32 patients. Wound related complications were the most common and occurred in 13 patients (28.26%) followed by pleural effusion & respiratory complications in 9 cases (19.5%), Anastomosis leak in 5 cases (10.8 %), Left lower lobe atelectasis in 3 cases (6.5%) and patient needing mechanical ventilation in 2 cases (4.34 %).

Out of 100 patients, 98 patients (98%) recovered and 2 patients (2 %) expired making the overall mortality rate of 2%.

IV. DISCUSSION: -

In our study of 100 patients with blunt trauma abdomen, the most common age group was found to be between 21 to 30 years (31 %) & only 8 patients were below 10 years of age, which is compared with study conducted by Liza J[1], which also has maximum patients in 21-30 years of age is 36%. It also goes in accordance with study by Davis J et al[2] . Males were affected 7 times more common than females. About 88% of the patients were males and 12% were females, this almost goes in accordance with study by Mehta N et al[3] .

Road traffic accident was the commonest mode of trauma accounting for 69 % of cases followed by fall from heights (29 %) and least caused by the assaults (2 %), which goes in accordance with study by Jayraj, Ravikar, et al[4] which also accounted RTA (78.5 %), fall from height (14.2 %), assaults (7.1 %) in their study . It also gpoes in accordance with study by Rahman S et al[5] which also accounted RTA (67%), fall from height (17%), assaults (8%) in their study.

Spleen (34 %) was the most commonly injured organ following blunt trauma abdomen followed by Liver (25 %), which is compared with study conducted by VikramYogish et al[6] which also accounted Splenic injury contributing (46.6 %) & Liver injury contributing (28.8 %) in their study.

Ultrasonography (FAST)[7] was performed in all the cases which helped in detecting free fluid in peritoneal cavity. Our current algorithm for the evaluation of blunt abdominal trauma included FAST in both stable and unstable patients as the initial screening tool which yielded a high sensitivity.

CECT Abdomen[8] was performed in patients who were hemodynamically stable after adequate resuscitation and helped in accurately diagnosing specific organ injury along with associated injury to other intra peritoneal and retro peritoneal structures.

A total of 54 patients conservatively, 46 patients underwent operative procedures, Splenectomy was performed in 5 patients, Splenorrhaphy was performed in 1 patient, Hepatorrhaphy was performed in 3 patients, Haemostatic Liver packing was done in 2 patients, primary bowel perforation repair / Resection & anastomosis was done in 18 patients, Mesenteric repair was done in 9 patients.

Complications were recorded in 32 patients. Wound related complications was most common and noted in 13 cases (28.26 %) followed by respiratory complications in 9 cases (19.5 %), anastomosis leak in 5 cases (10.8 %) & patient needing mechanical ventilation in 2 cases (4.34 %).

Out of 100 patients, 98 patients (98 %) recovered and 2 patients (2%) expired making the overall mortality rate of 2 %.

V. CONCLUSION:-

Conservative management was successful in selected patients. Close monitoring of patients undergoing conservative treatment and the availability of urgent surgical intervention if required is of paramount importance for successful management of patients with blunt trauma abdomen.

Operative intervention was needed in

unstable patients and in patients requiring exploration for multiple injuries.

Complications were commonly seen in surgically managed patients with wound related complications being most common. Mortality in present study is low (2 %). Associated injuries played a significant role in increasing the mortality.

From our study, it was concluded that patients with blunt trauma abdomen should have early & accurate diagnosis. They should be dealt with immediate, prompt management for better prognosis.

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