



NON-OPERATIVE MANAGEMENT OF SELECTED ABDOMINAL TRAUMA PATIENTS- A PROSPECTIVE STUDY

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ABSTRACT Contrast Enhanced Computerised Tomography (CECT) scan is considered to be a very important investigative technique for deciding, whether to manage conservatively i.e. non-operatively, in patients with abdominal trauma. But, CECT has its own risks and hazards. We undertook a prospective study to evaluate the safety and efficacy of non-operative management (NOM) in selected patients with abdominal trauma withholding or avoiding CECT scan of abdomen, which is the usual protocol of management. Exclusion criteria were, patients with peritonitis and those with active intra-abdominal bleed. Inclusion criteria were, patients with FAST (Focussed Abdominal Sonography in Trauma) positive, hemodynamically stable with blunt or penetrating trauma abdomen between age of 18 years to 60 years. Initially forty-two patients were included in the study, but inclusion criteria could not be satisfied in eleven patients. Another 9 patients were also removed from the list because they required immediate emergency laparotomy. Thus only twenty-two patients could fulfil both inclusion and exclusion criteria in the study period, which were included in the NOM study. Mean age of these patients was 29 years. 18 (81.8%) of these patients were male. Seventeen patients (77.3%) had sustained blunt trauma (Road Traffic Accidents- 12 and Fall from height-5). Five patients (22.7%) presented with penetrating trauma. NOM without CECT was successfully done in 17 (77.3%) patients. Whereas in 4 (18.2%) patients, emergency laparotomy was later performed, based on clinical judgement and ultrasonographic evidence. In one patient (4.5%), we had to do a CECT, because of deteriorating condition. Thus 21 out of 22 patients (95.5%) selected for study could be managed without exposing them to unnecessary CECT scan, thus significantly reducing the cost and radiation exposure to the patient. Selected cases of abdominal trauma could be managed by Non operative management without even doing CECT scan.

KEYWORDS : NOM. Non operative management. Abdominal Trauma. Blunt Trauma Abdomen. CECT scan. FAST.

Introduction

Non-operative Management (NOM) in blunt trauma abdomen is now a widely excepted management strategy world-wide now [1-6]. The success of this concept has also led to extending it to even penetrating trauma of abdomen [7-11]. Some centers specialising in management of trauma patients have reported success in management of certain gunshot injuries with NOM approach [12,13].

For the success of NOM, gastrointestinal and genitourinary viscera of the patient should be intact. This is very important in selecting the patients for NOM. The usual protocol of management of these cases is to do CECT scan of the abdomen. This has occupied the central role. [14-17]. CECT scan is not a straightforward procedure. It has its own risks and limitations. It is costly, interpreter dependant, skill intensive, requires shifting from the trauma care unit to the CT chamber, it carries radiation risk, risk of contrast allergy, anaphylaxis and contrast nephropathy. It also carries a small but negligible risk of cancer [18,19]. CECT can even miss injuries of certain areas and organs [20].

This study was done to ascertain whether CECT can be done away with? Atleast in selected patients? Very few studies have dwelled on this question. We intend to show the efficacy of clinical judgement, use of non-invasive and safe procedures like Ultrasonography (USG) in the management of such cases and try to avoid using CECT as a first and compulsory mode of investigation in patients with Abdominal trauma.

Materials and Methods

This was a prospective study done in our medical college hospital, from January 2016 to December 2017. The inclusion criteria was, all patients presenting to the hospital with abdominal trauma, who were hemodynamically stable or responded to initial resuscitation, FAST (Focussed Abdominal Sonography in Trauma) positive between age 18 years to 60 years were included in the study. Patients having ongoing internal bleeding, unstable patients, patients having signs of peritonitis, fresh blood aspirates from Ryle's tube or through rectum were candidates for emergency laparotomy. Such cases were not included in the study. Patients with Penetrating Trauma without peritoneal breach were excluded from the study.

Patients presenting in the emergency room were managed according to

the ATLS (Advanced Trauma Life Support) protocol. Life threatening conditions were recognised and dealt with in the primary survey and after stabilising the patient, a secondary survey is done. All patient were given intravenous fluid resuscitation, X-ray examination of the relevant portions of body and FAST was done, as soon as possible after the arrival of the patient.

FAST positive patients who satisfied our inclusion criteria were included in our study for NOM, after taking proper consent. A detailed sonographic examination was done in such patients. Patients managed by NOM were subjected to detailed clinical examination to meticulously and diligently look for signs for peritonitis or other signs of deterioration. CECT was done in patient who deteriorated with NOM.

Results

Forty-two patients were admitted with abdominal trauma between January 2016 to December 2017. Out of which 9 patients had to undergo emergency laparotomy and 11 patients did not meet our inclusion criteria for NOM. Thus 20 patients out of 42 were excluded. The remaining 22 patient were included in our study.

The mean age of the patients was 29 years and 18/22 (81.8%) were male patients. 17 patients sustained blunt trauma abdomen, whereas 5 patients had penetrating trauma abdomen. Among blunt trauma patients 12 had sustained injury due to Road traffic accidents and 5 patients had fall from height.

Detailed ultrasonography revealed the following Table:1

Table 1: Detailed USG abdomen findings (n=15)

Patients with blunt trauma abdomen (n=12)	
Organ injured	Number (%)
Liver	8/12 (66.7%)
Spleen	5/12 (41.7%)
Kidney	1/12 (8.3%)
Patients with Penetrating trauma abdomen (n=3)	
Organ injured	Number (%)
Liver	1/3 (33.3%)
Kidney	1/3 (33.3%)
Urinary bladder	1/3 (33.3%)

Seven patients had significant fluid in the peritoneal cavity without any solid organ injury. These were all managed conservatively by NOM without any CECT and without any laparotomy.

There was no mortality of the patients in this study during the time of their stay in the hospital in 17 patients managed by NOM and 4 patients who underwent laparotomy. Out of these 4 patient two had bleeding from the splenic rupture site and one had mesenteric tear and ischemia of the intestine. Another patient had significant clots with small laceration of liver Table-2.

Table-2: Findings at Laparotomy of failed NOM patients (n=4)

Findings	
Active bleeding from Splenic laceration	2
Mesenteric tear with ischemia of intestine	1
Only clots with small liver laceration	1

Discussion

The primary mode of management of abdominal injuries used to be laparotomy until the later part of last century. In the last two decades, there is a drastic change in the approach. The pediatric surgeons managing blunt trauma abdominal injuries were successfully treating cases with NOM [1]. Adult surgeons also started replicating this strategy and this changed the perception and approach in dealing with even adult patients with abdominal trauma. This approach was subsequently expanded to include patients having hemoperitoneum and altered mental status and also to penetrating stab injury patients [2, 10,11]. Recently some trauma centers have reported success with even managing patients with gunshot injuries [12,13]. This approach in selected patients has led to avoidance of unnecessary laparotomies and also perioperative complications associated with it [21,22].

A proper evaluation of abdominal injuries is the most important step in managing patients by NOM method. Clinical evaluation, although very important is not sufficient in itself. Altered mental status and altered sensations confounds and makes the clinical evaluation all the more difficult. Hence additional investigations are frequently required. CECT scan has occupied a prominent spot in this segment [23].

However CECT as modality of investigation comes with its own cup of woes. It is not available in resource poor countries, it is operator dependent, skill intensive, interpreter dependant and it also has its attendant complications, which could be serious and also fatal at times.

On the other hand USG abdomen is cheaper, more widely available and less time consuming, can be done at bed side, (if required) no requirement of contrast and no radiation exposure. In this study we explored the possibility of avoiding CECT in selected patients with abdominal trauma and fill the investigative gap with ultrasonography, initially FAST and later detailed Ultrasonography.

By this protocol we could successfully manage 77.3% of cases without laparotomy and without CECT. Whereas 22.7% cases underwent subsequent laparotomy due to failure of NOM. Out of the failure of NOM cases (5) only one patient had to undergo CECT. That means 21/22 patients (95.5%) cases were saved of unnecessary CECT.

There were no missed injuries, no morbidity and mortality in patients managed by NOM. Rate of detection of injuries by detailed USG examination was 68.2%, which corroborates with other studies [24,25,26].

Conclusions

CECT can be selectively and judiciously used in cases of abdominal trauma cases and a significant numbers of such cases could be safely managed by Non-Operative Management (NOM), thereby avoiding arbitrary and reckless use of CECT scan.

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