ORIGINAL RESEARCH PAPER

Radiodiagnosis

ROLE OF COMPUTED TOMOGRAPHY SCANS IN PATIENTS FOLLOWING ABDOMINAL TRAUMA

KEY WORDS: Computed Tomographic(CT),RTA(Road traffic accidents)

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ABSTRACT

INTRODUCTION: Blunt abdominal trauma is one of the leading causes of deaths in trauma setups with varied etiologies like RTA(Road traffic accidents),assaults,fall etc.CT remains essential for detecting lesions that require immediate intervention and those that require in-hospital observation and medical management.
OBJECTIVES: To evaluate the role of CT in diagnosing injuries following blunt abdominal trauma.
METHODS: Study of 50 patients with blunt abdominal trauma to MGM hospital, Kamothe, Navi Mumbai done with CT during July 2016 to December 2016.
RESULTS: In the present study,injuries seen were:liver injuries - 12 patients,spleen - 16,renal- 3,urinary bladder- 8,bowel-4,mesentery-6,pancreas-1.Predilection was seen in 15-40 year males.
DISCUSSION: The major advantages of CT scans is to identify the severitry of injury,to salvage the injured viscera and to manage the patients sustaining trauma morbidity and mortality.
CONCLUSION:CT was found to be more sensitive for abdominal visceral injury for prompt diagnosis and management,

INTRODUCTION:

Blunt abdominal trauma is a major contributor to trauma related deaths especially seen in age group of 15-40 years. Clinical examinations are often subjective and unreliable and unspecific in patients with blunt abdominal trauma. In patients with blunt abdominal trauma, both solid and hollow viscera may be injured. These injuries may result in persistent bleeding or peritonitis, which might be lethal. Most common findings in these patients include hemoperitoneum, solid viscera, hollow viscera, mesenteric and diaphragmatic injuries. Unenhanced CT is routinely used, protocol variations should be considered for patients with subtle findings at unenhanced CT, especially for bowel and mesenteric injuries.

AIMS AND OBJECTIVES:

1) To evaluate the role of CT in diagnosing injuries following blunt abdominal trauma
2) To study the most common etiology causing abdominal trauma in Navi Mumbai.

MATERIALS AND METHODS:

SOURCE OF DATA: Fifty patients presenting to casualty within the study period will be subjected to computed tomography scans which includes inpatients, out patients and referred patients to MGM Hospital, Kamothe, Navi Mumbai.

METHOD OF COLLECTION OF DATA:

a) STUDY DESIGN: prospective study

b) STUDY PLACE: Department of Radio Diagnosis, MGM Hospital, Kamothe, Navi Mumbai.

c) STUDY DURATION: July 2017 to December 2017

d) Sample size: 50

e) INCLUSION CRITERIA: All cases referred for C. T. scan with blunt abdominal trauma at MGM Hospital , Navi Mumbai

f) EXCLUSION CRITERIA:

1. Patients with known bleeding disorders
2. Patients with history of previous abdominal trauma.

g) METHODOLOGY:

The patients presented for CT scans and following information was retrieved like age, gender, mode of injury like road traffic accident, assault, fall etc, time of injury, clinical indications for CT scans were documented. The presence or absence of abdominal pain (whether diffuse or local), vomiting, drug or alcohol intoxication, any comorbid status or pre existing diseases, history of coagulopathy, previous trauma histories, CT was assessed for many different forms of visceral injury and various types of fractures.

CT PROTOCOL:

CT examination was performed on Toshiba Aquilion 64 slice machine in the department of Radiodiagnosis, MGM medical college, Kamothe , Navi mumbai .

IMAGING PROTOCOL:-

1. Axial CT examination will be carried out in the supine position.
2. Preliminary scout film followed by 5mm thin non enhanced CT scan was obtained in all cases.
3. Contrast was injected to obtain images in dual phase.
4. Contrast enhanced dual phase scan was performed in all cases. This included 5mm sections from the level of xiphisternum to the level of iliac crest obtained with a scan delay of 40 seconds. Scans in venous phase were obtained with slice thickness of 5mm and total scan delay of 60-75 seconds from the beginning of contrast injection.
5. Around 75 cc of non ionic contrast i.e. Omnipaque 300 mg% was injected via 18G intravenous catheter into the antecubital vein.
6. All images were viewed at window width-300, window level-40 with a wide and narrow window setting as and when deemed necessary.

REVIEW OF LITERATURE

CT has major advantages over plain radiography, radionuclide studies, and angiography, since it is noninvasive, appears to be highly sensitive and specific, and is capable of rapidly surveying the entire abdomen and retroperitoneum for possible associated injuries.

Haemodynamically stable patients who are brought to the emergency department after blunt abdominal trauma or patients who stabilize after initial resuscitation are candidates for rapid work-up with helical CT.

CT is the superior diagnostic modality in the diagnosis of abdominal trauma. US can miss crucial injuries and may lead to inappropriate management in some patients. Hence it is imperative that all US positive cases should be followed by CT. Similarly CT must also be performed in symptomatic patients with negative US scans and in patients with suboptimal US scans

Computed tomography is one of the most valuable tools in the diagnostic work-up of trauma patients. The capability of CT to detect active hemorrhage has been well recognized. The information provided by MDCT was helpful not only for diagnosis but also for determining the proper course of treatment.

RESULTS:

A total of 50 patients, who were came with abdominal injury were sent for CT scan and were included in the present study.the most common age of patients was found to be 15-40 years with male preponderance to trauma.

Table No. 1. Incidences of different modes of injury

Type of Injury	No. of Cases	Percentage
*RTA	28	56.00
FALL	11	22.00
ASSAULT	09	18.00
OTHERS	02	04.00
TOTAL	50	100.00

* Road Traffic Accident

Table No. 3. Number of patients showing various visceral injuries as observed on CT Scan

Organs	Cases	Percentage
Liver	12	24
Spleen	16	32
Kidneys	03	06
Bowel	04	08
Bladder	08	16
Mesentry	06	12
Pancreas	01	02
Total	50	100

In the present study, road traffic accidents was found to be the most common etiology for blunt abdominal trauma in Navi mumbai area followed by fall and assault.

Liver injuries were seen in 12 patients (24%), spleen in 16 (32%), renal injuries in 03 (06%), bowel injuries in 04 (8%), bladder injuries in 8 (16%), mesentry in 6 (12%), pancreas in 01 (2%).The injuries pertaining to the solid organs are seen in form of capsular collections, laceration, contusions, pedicle injury etc

DISCUSSION:

The abdomen is one of the most common sites of body that is vulnerable to injuries. CT has become most definitive and sensitive modality for diagnosis of abdominal trauma. This information provided allows the prognosis and further course of management in blunt abdominal trauma. In our study, the most commonly affected age group was found to be 15-40 years with males being more affected. Also in our study, spleen was found to be the most affected organ as also observed in study by Jansen JO et al. Also Cahir JG reported that spleen is most commonly injured solid abdominal organ.

Fig.A shows axial CT showing splenic laceration with perisplenic fluid collection.

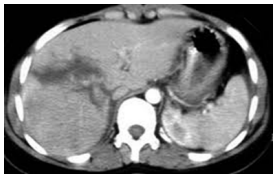

Fig.B shows axial CT scan of liver laceration involving right lobe.

CONCLUSION:

Multi detector CT is proven to be very sensitive to all types of organ injury. It is also considered the imaging modality of choice to diagnose solid organ injury thereby determining the grading of this injury on which the management is decided upon. Pre-contrast CT scan followed by post-contrast scan using IV contrast material should be done for all patients presented with blunt abdominal trauma whenever possible.

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