



## ROLE OF PLAIN ABDOMINAL RADIOGRAPHY AND ULTRASONOGRAPHY IN EVALUATION OF NONTRAUMATIC ACUTE ABDOMEN

### KEYWORDS

GIT- Gastro-intestinal tract, US/USG- Ultrasonography, K.U.B-Kidneys, Ureters and Bladder

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**ABSTRACT** *To study the various plain radiographical findings associated with nontraumatic acute abdomen.*

*To study the various ultrasonographic findings associated with nontraumatic acute abdomen.*

*To analyze the efficacy of plain x-ray and ultrasonography in the diagnosis of nontraumatic acute abdomen and to compare their individual merits and their superiority in the diagnosis. Both plain x-ray and ultrasonographic findings were correlated with final diagnosis which was done either by other mode of investigation, clinical correlations or laparotomy<sup>1</sup>.*

### INTRODUCTION

The diagnosis of nontraumatic acute abdomen is a team work of radiologist and clinician. Nontraumatic acute abdominal conditions require precise radiological diagnosis to achieve excellent results to reduce morbidity and mortality<sup>2</sup>.

In earlier part of twentieth century, plain x-ray of abdomen was the only such investigation which was introduced as a diagnostic tool in clinical practice, even though x-rays are shadows and not the true images. It turned out plain x-ray was useful in diagnosis of 40% of acute abdominal cases. We are grateful to our father of x-ray Sir.W.C. Roentgen as even after 100 years of detection of x-rays by him no other modality of investigation is able to show the G.I. perforation as plain x-ray of abdomen can<sup>3</sup>.

As there is tremendous advancement in scientific fields, more and more diagnostic facilities like ultrasonography, endoscopy, MRI, CT scan, radionuclide scan and other sophisticated investigations have developed which can give more information than the plain x-ray. Investigations such as CT scan, MRI and radionuclide scan are very costly and require special training. Ultrasound is a small machine, which does not require many accessories and trained staff is easily available all over the world. It can be installed easily and less space occupying. Portable one can also be taken to the places where required. Another most important thing is that ultrasound is a non invasive procedure.<sup>4</sup>

This technique has gained acceptance as a major diagnostic tool largely because of the technological development of real time units and M and B mode sector scanners, with high resolution value to visualize intra abdominal structures has led to its usefulness as one of the major imaging technique in most nontraumatic acute abdominal conditions except in few where bowel loops are largely distended with air. As air is a bad conductor of sound waves, the pathology can be missed in such conditions, which can still be picked up by plain x-ray abdomen where ultrasound has failed to detect the lesion. So with this view a study was planned to analyze the findings of plain x-ray and ultrasound in non traumatic acute abdomen, to evaluate the acute abdominal conditions by using plain x-ray and ultrasound<sup>5,6</sup>.

### MATERIALS AND METHODS

#### Type of study:

The present study was a non-randomized, prospective study.

#### Source of data:

Data for the study was collected from the patients clinically having acute onset of pain abdomen attending the department of Radio-diagnosis, Alluri Sitarama Raju Academy of Medical Sciences, Eluru.

### Study period

This study was performed during the period from October-2013 to September-2015 excluding the period of data analysis and write-up.

### DISCUSSION

The accurate diagnosis of acute abdominal conditions is crucial in the management of patients in emergency. The varieties of conditions requiring immediate management vary widely in their clinical presentation and laboratory findings. In the last decade real time ultrasonography has become a choice of investigation for clinical problem within the abdomen. It is non invasive, safe, easy to carry out, convenient for the patients, and is showing increasing accuracy and specificity when compared to plain x ray abdomen. However, in few abdominal conditions in which bowel loops are largely distended with air, ultrasound has failed to detect abdominal lesions in such cases as air is a bad conductor of sound waves. However merits and demerits of ultrasonography and plain x ray abdomen is discussed here in each system and effort has been made to know the efficiency of both in the diagnosis of nontraumatic acute abdomen<sup>3</sup>.

#### Age incidence in our study:

Age of the patients varied from 5 years to 90 years, and most of the cases were in the age group of 20-40 years.

#### Sex distribution in our study:

Total numbers of patients included in our study were 50 out of which 34 patients were males (68%) and 16 patients were females (32%).

#### Incidence of chief complaint:

Patients in our study presented with chief complaint of pain abdomen and majority of patients presented with diffuse pain abdomen (38%).

#### Distribution of causes of nontraumatic acute abdomen among patients in our study:

In our study majority of cases were of GIT pathology 24 (48%) followed by renal causes (32%) and hepatobiliary pathology (14%) when compared to 2 studies done on 50 patients of nontraumatic acute abdomen Walsh et al and Gupta et al where most of cases were of hepatobiliary pathology.

### CONCLUSION

The study of role of plain abdominal radiography and ultrasonography in nontraumatic acute abdomen was conducted from October - 2013 to September-2015 in Alluri Sitarama Raju Academy of Medical Sciences, Eluru.

In the study of 50 patients with nontraumatic acute abdomen following were the significant findings:

- A total of 50 patients were studied of which 34 patients (68%) were males and 16 patients (32%) were females.
- Age range varied from 5 years to 90 years. Most cases were in the age group of 20-40 years.
- All patients underwent plain x ray abdomen AP view at the earliest, ultrasonography of abdomen and other investigations were also done as required. The plain radiography and ultrasonographic signs in these patients and their significance were studied.
- Plain X-ray was helpful in 24 patients with 48% diagnostic accuracy. Ultrasonography was helpful in 45 patients with 90% diagnostic accuracy. When combined with plain X-ray and ultrasonography accuracy rate increased to 96%.

## RESULTS

Total numbers of patients included in our study were 50 out of which 34 patients were males (68%) and 16 patients were females (32%). Age of the patients varied from 5 years to 90 years, and most of the cases were in the age group of 20-40 years.

All patients in our series presented with pain abdomen among them (19 cases) 38% of patients presented with diffuse pain abdomen, (7 cases) 14% with right hypochondrium pain, (8cases) 16% in the right loin pain & loin pain radiating to groin, (7 cases) 14% with left loin pain & loin pain radiating to groin, (3cases) 6% epigastric pain, (5cases)10% right iliac fossa pain and (1 case) 2% with left hypochondrium pain.

The most common chief complaint was pain abdomen with associated symptoms of fever, constipation, burning micturation and vomiting were seen in some patients. Some specific signs like guarding and rigidity in cases of perforation and murphy's sign positive in case of gall bladder pathology were also seen in some patients during clinical examination.

Based on clinical history and clinical examination provisional clinical diagnosis was made. According to clinical diagnosis there were 16 cases (32%) of renal and ureteric pathology, 13 cases (26%) of intestinal obstruction, 7cases (14%) of hepatobiliary pathology, 5 cases (10%) of intestinal perforation, 4 cases (8%) of acute appendicitis, 2 cases (4%) of acute gastritis, 3 cases (6%) of other causes (1 case each of acute pancreatitis, splenic pathology and appendicular mass).

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