



COMPARATIVE STUDY BETWEEN PLAIN RADIOGRAPHY AND ULTRASOUND ABDOMEN IN ACUTE ABDOMINAL CONDITIONS AT MEDICAL COLLEGE, HOSPITAL BIKANER.

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ABSTRACT

Introduction: Acute abdomen might indicate a progressive intra-abdominal condition that is threatening to life or capable of causing severe morbidity.

Methods: This prospective study was conducted between Jan. and July 2017 on 50 consecutive patients. Detail abdominal ultrasound was done. After ultrasound traditional three-views acute abdominal xray series (AAS) were taken. Final diagnosis was made on the basis of operative findings/therapeutic response/ histopathological/ laboratory findings. Finally, accuracy of clinical diagnosis, plain film and ultrasound in evaluation of acute abdomen was determined.

Results: Ultrasound yielded an overall sensitivity and specificity of 70.00% and 80.00% respectively. The AAS interpretations yielded an overall sensitivity and specificity of 20.00% and 40.00% respectively.

Conclusion: Plain x ray is less sensitive in the evaluation of nontraumatic acute abdomen so it should be used together with ultrasound abdomen in order to arrive at a correct diagnosis.

Keywords: Acute abdomen, Ultrasonography, X-ray abdomen.

INTRODUCTION

Intestinal obstruction is a common surgical emergency and, because of its serious nature, demands an early diagnosis¹. Plain abdominal radiography remains the first step in the diagnostic imaging evaluation of a patient with suspected bowel obstruction. However, the diagnostic accuracy of plain radiographs alone is low, varying from 55% to 80%; in up to 20% of patients, there may not be any plain radiographic evidence of intestinal obstruction².

Recently, CT has been advocated as a procedure that has higher sensitivity than plain films and can be used to determine the precise site and cause of obstruction. Although US have been infrequently used to evaluate patients with suspected intestinal obstruction, few studies have shown US to be useful in patients with clinical signs of obstruction and gasless plain radiography due to fluid-filled loops. While the role of plain films, US, and CT individually in different clinical conditions has been the subject of many reports^{3,4}, there are limited studies comparing the relative roles of these three imaging techniques in the evaluation of bowel obstruction. Accordingly, we carried out a prospective study to evaluate the diagnostic accuracy of plain abdominal radiography, US and CT in patients with clinical suspicion of intestinal obstruction with reference to the presence or absence of obstruction, and the level and cause of obstruction.

METHODS

This prospective study was conducted between Jan and July 2017 on 50 consecutive patients referred to the department of radiology and Imaging from the department of emergency, S.P. Medical College Teaching Hospital Bikaner for evaluation of acute abdomen. Critically ill patients, pregnant ladies, patient with trauma abdomen, acute abdomen due to gynaecological pathologies were excluded from our study. After obtaining consent clinical information were recorded in preformed Performa.

Detail abdominal ultrasound was done. After ultrasound traditional three-views (upright chest x-ray, supine and upright abdominal xrays) acute abdominal x-ray series (AAS) were taken. Left lateral decubitus film wastaken only when required. The patient was kept in a given position for 10 minutes before the horizontal-ray radiograph to allow time for any free gas to rise to the highest point. The bladder was emptied before the supine radiograph was taken and the area from the diaphragm to the hernial orifices was included in the film.

Plain x-rays were evaluated by a blinded (DS) radiologist. The images were interpreted with only the knowledge that patients presented with abdominal pain. Ultrasound was done by a blinded radiologist (PS). If free fluid or collection was seen in the peritoneal cavity ultrasound guided aspiration was done.

Special investigation like intravenous urography, contrast studies of gastrointestinal tract, CT scan of abdomen were conducted whenever necessary.

Final diagnosis was made on the basis of operative findings/therapeutic response/histopathological/laboratory findings. These data were analysed manually to meet the objectives of the study.

RESULTS

Age of the patient ranged from 11 months to 75 years. Most of the patients in our study were in the age group 31-40 years. Mean age of the patients was 40.9 yrs \pm 12.5 years. Most of the patients in our study were male (60%). Male: Female ratio was 3:2. The most common chief complaint was acute abdominal pain in 49 cases (98.00%). Other presenting symptom included vomiting (8%).

Table 1: Distribution of cases based on final diagnosis.

Diagnosis	Percentage
Gut Pathology	18(36.00%)
Hepatobiliary Pathology	12(24.00%)
Pancreatic Pathology	4(8.00%)
Renal	12(24.00%)
Others	4(8.00%)
Total	50(100.00%)

Table 2: Overall sensitivity and specificity of ultrasound and plain x ray in the diagnosis of acute abdomen.

	Sensitivity	Specificity
Ultrasound	70.00%	84.00%
Plain X ray	20.00%	40.00%

DISCUSSION

In our series, 18(36.00%) cases were of gut pathology. This was followed by hepatobiliary pathology, 12(24.00%) cases. In contrast to this, Gupta K et al and Walsh PF et al had found that most of the cases in their series were of hepatobiliary origin^{3,4}.

The overall sensitivity and specificity of ultrasound was 70.00% and 84.00% respectively, which is slightly lower than Gupta K et al.³ Similarly overall sensitivity and specificity of plain x ray was 20.00% and 40.00 % respectively which is also lower than that of Gupta K et al.³

In a retrospective study of 1000 patients with nontraumatic acute abdominal pain, Ahn et al concluded⁵ abdominal radiographs are not sensitive in the evaluation of adult patients presenting to the emergency department with nontraumatic abdominal pain. Other series have also concluded that abdominal radiography is of limited use in the assessment of patients with acute abdominal pain which is similar to our series.^{6,7}

CONCLUSION

In conclusion, AAS is a less sensitive technique in the evaluation of nontraumatic acute abdomen. It should be used together with ultrasound abdomen in order to arrive at a correct diagnosis

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