

Role of X Ray and USG in Patient Admitted with Acute Abdomen

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ABSTRACT

Introduction: Acute abdomen is the common cause of emergency admissions. Investigations like X RAY and USG plays an important role in the diagnosis of disease and so prompt treatment can done without delay and unnecessary laparotomies can be avoided

Material and methods: This study was done on 1138 patient which were admitted over a period of one year with acute abdomen in Surgery department. Scout X-ray and USG was done in 181 patients. Scout X –Ray film gives lots of information and very helpful in diagnosing perforation and intestinal obstruction.

Results: Incidence of acute abdomen was 26.93%. Majority of patients (76.97%) were from rural area. In 80% cases of acute abdomen gastrointestinal system was involved. X-ray has diagnosed all cases of perforation peritonitis (100%). Cholecystitis was diagnosed in 96% cases with USG. Ultrasound was uniquely diagnostic in cases of appendicular abscess and twisted ovarian cyst.

Conclusion: This study shows that simple X-Ray and USG plays an important role in definite diagnosis of acute abdomen so as to avoid unnecessary laparotomies.

Keywords: Acute Abdomen, Ultrasound, X- Ray.

INTRODUCTION

The term acute abdomen defines a clinical syndrome characterized by abdominal pain of sudden onset developed over a period several hours requiring surgical or medical treatment (Das S 2000).¹ Acute abdomen comprises 5-10 % of people presenting as a general surgical emergency (White M.J. et al 2002).² An early and accurate diagnosis is essential for prompt and appropriate management in order to limit morbidity and mortality. Moreover identification of surgical problems is utmost importance, as most patients of acute abdomen do not require surgery. A thorough history followed by meticulous clinical examination are no doubt cornerstone of efficient patient management. However diagnosis based on clinical evaluation alone has been accurate in only 65% of cases (Staniland J.R et al 1972)³ and is often associated with delay in diagnosis and treatment and unnecessary laparotomies are done due to considerable overlap of symptoms and signs of various disease entities causing acute abdomen (Schwerk et al, 1989).⁴

The purpose of laboratory tests and radiological examination is to confirm and/ or exclude diagnostic possibilities that are being considered based on a proper history and physical examination. The main goal of imaging in acute abdomen is to narrow down the differential diagnosis and for prompt treatment.

In the past plain film radiograph of abdomen were performed. Plain film radiograph is diagnostic in only about 10% of cases and therefore being discouraged (Shaffer HA Jr, 1992 and Anyanwu et al 1998).⁵⁻⁶ Scout film of abdomen

is an overused. USG has been advantage of being non-invasive, portable, cheap and no side effects.

The present study has been carried out to explore various aspects related to acute abdomen with special reference to role of Scout X-ray abdomen and ultrasonography.

The present study was conducted with the aim to know the incidence of acute abdomen, usefulness of X-Ray and USG in diagnosing the cases presenting with acute abdomen.

MATERIAL AND METHODS

The present study was conducted in the Department of surgery and Experimental Surgery, S.S Medical College and Associated G.M. and S.G.M Hospitals, Rewa (M.P.). 1138 patients were admitted with acute abdomen over a period of one year in surgery department. All the patients with acute abdomen were included in the study. All the patient with acute abdomen admitted in Department of Surgery with acute abdomen formed part of study.

Patients with abdominal trauma, obstructed hernia and malignancy were excluded from the study.

Patients were subjected to routine haematological, urine examination and biochemical estimations. Patients were subjected to scout Xray abdomen in standing position. Patients with dilemma of diagnosis with inconstant results of xray abdomen were subjected to ultrasonography.

All patients were managed according to clinical diagnosis on admission or its correction or confirmation after xray abdomen and USG. Patients were either conservatively managed or were subjected to surgical intervention depending on the involvement of the system. Patients were discharged and followed up as OPD.

STATISTICAL ANALYSIS

All the data was put in microsoft excel sheet to generate tables. Descriptive statistics was used to infer results.

RESULTS

In this study there were total 4225 admissions in the hospital. Total emergency admissions were 2714 and out of which 1138 were patients of acute abdomen.

In this study 1138 patients of acute abdomen were studied over a period of one year. The following observations were made.

Incidence of acute abdomen cases was 26.93% if total ad-

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How to cite this article: Siddharth Lakhoti, G P Shrivastava. Role of X Ray and USG in patient admitted with acute abdomen. International Journal of Contemporary Medical Research 2016;3(4):953-955.

Total no of admission=4225	Incidence of acute abdomen cases
Acute abdomen cases=1138	1138/4225x 100=26.93%
Total no emergency admissions=2714	1138/2714x100=41.93%

Table-1: Incidence of Acute abdomen

Sr no	Residence	No of cases	Percentage
1	Rural	876	76.97
2	Urban	262	23.02
		1138	100

Table-2: Distribution of cases according to residence

S No	System	No of cases	percentage
1	Gastrointestinal tract	911	80.05%
2	Genitourinary	159	13.97%
3	Miscellaneous	68	5.97%
Total		1138	100%

Table-3: System wise distribution of acute abdomen cases

S No	Disease group	No of X rays	X-Ray Abdomen (positive)	Percentage
1	Perforation Peritonitis	60	60	100%
2	Intestinal obstruction	27	26	96.29%
3	Cholecystitis	22	-	-
4	Appendicitis	19	-	-
5	Abscess	9	5	55.55
6	Renal/ureteric stone	9	2	22.22%
7	Appendicular lump	7	7	100%
8	APD	6	-	-
9	COLITIS	3	2	66.66%
10	Pancreatitis	1	-	-
11	Twisted ovarian cyst	1	-	-
12	Hepatitis	1	1	100%
13	Perisplenitis	1	1	100%
	Total	166	112	67.46%

Table-4: Role of Scout X RAY In Acute Abdomen

S No	Clinical diagnosis	No of cases	Post X-Ray Diagnosis
1	Acute intestinal obstruction	1	Perforation peritonitis
2	Colitis	1	Perforation peritonitis
3	Pelvic abscess	1	Perforation peritonitis

Table-5: Conditions where X-Ray was Uniquely Diagnostic:

missions taken into consideration. If only emergency admissions were considered then the incidence of acute abdomen was 41.93%.

According to place of residence 76.97% patients were from rural background (table-2).

As shown in table 3 gastrointestinal system accounts for 80.05% cases of acute abdomen.

X-Ray was 100% diagnostic in cases of perforation peritonitis. Intestinal obstruction was diagnosed in 96.29% cases (table-4).

It is evident from the table -5 that out of 166 Xrays done

S No	Disease group	No of USG	USG Abdomen	
			Positive	%
1	Cholecystitis	25	24	96%
2	Appendicitis	16	-	-
3	Perforation peritonitis	13	11	84.61%
4	abscess	11	8	72-72%
5	Renal/ureteric stone	6	5	83.33%
6	Appendicular lump	5	2	40%
7	Intestinal obstruction	4	2	50%
8	APD	4	-	-
9	Colitis	2	-	-
10	pancreatitis	2	1	-
11	Perisplenitis	2	-	-
12	Twisted ovarian cyst	1	1	100%
13	Hepatitis	1	-	-
Total		92	54	58.69%

Table-6: Role of USG in Diagnosis of Acute Abdomen Table 6 Role of USG in Diagnosis of Acute Abdomen

3 (1.80%) were uniquely diagnostic i.e. they all showed gas under diaphragm (perforation) when it was not suspected clinically.

It is evident from the table -5 that out of 166 Xrays done 3 (1.80%) were uniquely diagnostic i.e. they all showed gas under diaphragm (perforation) when it was not suspected clinically.

USG was able to diagnose 96% cases of cholecystitis. intestinal obstruction was diagnosed only in 50 % of cases with USG (table-6).

It is evident from the table-7 that out of 92 USG abdomen done, 14 (15.21%) were uniquely diagnostic i.e. showed a diagnosis other than first clinical diagnosis.

DISCUSSION

The acute abdomen remains a challenge to surgeons and other Physicians. Abdominal pain is most common cause for hospital admissions in most parts of the world. An early diagnosis of the underlying cause is of great value for prompt selection of appropriate management, surgical or conservative, thereby reducing the morbidity and mortality on one hand and unnecessary laparotomy on other.

Acute abdominal pain represents 5 to 10 % of all emergency department visits. The present study shows that acute abdomen were 26.93% of all admissions in a year in surgical ward. The percentage is comparable to percentages given by Kumar A (1996)⁷ and more than that of Pal D.K. (1992).⁸ The present study showed that acute abdomen was responsible for 41.93% of all emergency admissions. This percentage is significantly higher than percentage observed in western studies (Brewer R J et al, 1976)⁹ and White M J et al, 2002.¹⁰

Studies are available that have compared the role of USG and abdominal X-RAY in acute abdomen (Simeone J F et al, 1985 and Walsh P F et al 1990).¹¹⁻¹² Walsh et al, while evaluating

Sr No	Pre USG Diagnosis	No of cases	Post USG diagnosis
1	Appendicular lump	3	Appendicular abscess-2 Twisted ovarian cyst-1
2	Perforation peritonitis	2	Appendicular abscess -1 Liver abscess-1
3	appendicitis	2	Appendicular abscess -1 Pelvic abscess -1
4	Liver abscess	2	Hydatid cyst-1 Pelvic abscess-1
5	Renal/ ureteric stone	1	Twisted ovarian cyst -1
6	cholecystitis	1	Renal cortical cyst -1
7	Pyelonephrosis	1	Small intestine mass-1
8	hepatitis	1	Carcinoma head pancreas-1
9	persplenitis	1	Hematoma spleen-1

Table-7: Conditions where USG was Uniquely Diagnostic

the role of immediate USG in acute abdomen showed that USG was more informative than plain X-Ray in 40% of their cases. Simeone et al shown that while plain films scored over USG in 5% cases only. In our study 78 cases both USG and X-Ray was done. In 41 (52.56%) cases USG was found superior than X-RAY. IN 19 (24.35%) cases X-ray was found more useful than USG. While both investigations were of equal value in 14 (17.04%) cases.

Overall plain film of abdomen was abnormal in 112 patients out of 166 X-Ray films carried out in 181 patients of acute abdomen. USG abdomen was abnormal in 68 cases out of 92 cases of acute abdomen where USG was performed. USG confirmed the clinically suspected diagnosis in 54 (58.69%) cases and in 14 cases (15.2%) it changed the clinical diagnosis.

All acute abdomen are not life threatening but needs critical analysis and correlation of symptom complex and signs in the patients so that therapy may be initiated for relief of pain and subsequent investigations should be carried out for continuation of conservative treatment or if required surgical intervention at the early opportunity. As a practical investigation can be planned on the basis of availability and cost effectiveness to achieve the goal to help all patients.

CONCLUSION

Acute abdomen is the most common presentation in emergency surgical cases. Definite diagnosis is very important. For correct diagnosis X-Ray and USG plays an important role. Perforation peritonitis can be diagnosed with simple x-ray abdomen erect posture. Appendicular abscess and twisted ovarian cyst can be diagnosed with USG. In this study we had shown that a simple X-Ray And USG plays important role in diagnosis so that unnecessary laparotomies can be avoided.

REFERENCES

1. Das S: Examination of an acute abdomen. A manual of clinical surgery Ch 2000;33:335-356.
2. White M J and Counselman F.L.: Troubleshooting acute abdominal pain- Part 1 and 2. Emergency Medicine:Jan 2002.
3. Staniland JR, Ditchburn J et al: Clinical presentation of acute abdomen:study of 600 patients. BMJ 1972;3:393-398.
4. Schewerk WB, Wichtrup B, Rothmund M, Ruschoff J: Ultrasonography in diagnosis of acute appendicitis: a prospective study. Gastroenterology 1989;97:60-639.
5. Shaffer HA Jr. Perforation and obstruction of the gastrointestinal tract assessment by conventional radiology. Radiol Clin.North AM. 1992;30:405-429.
6. Anyanwu A.C. et al: Are abdominal radiographs still overutilized in the assessment of acute abdominal pain? Journal of Royal Coll of Edinburg 1998;43:267-270.
7. Kumar A: A Clinicopathological study of non traumatic perforation of gastrointestinal tract and comparison between conservative and operative management. Thesis for MS (Gen Surg), APS Univ. Rewa (M.P.),1996.
8. Pal D.K. :Clinical study of enteric perforation. Thesis for MS (Gen Surg.), APS Univ. Rwa (M.P), 1992.
9. Brewer R J, Golden J T, Hitch D.C. et al: Abdominal pain-An analysis of 1000 consecutive cases in university hospital emergency room. American Journal of Surgery 1976;31:219-224.
10. White M J and Counselman F.L.:Troubleshooting acute abdominal pain-part 1 and 2. Emergency medicine :Jan 2002
11. Simeone JF et al:Comparison of plain film and sonography in valuation of acute abdomen. AJR 1985;144:49-52.
12. Walsh PF, Crawford D, Crossling F T, Sutherland GR, Negrette JJ, Shand J: The value of immediate ultrasound in acute abdominal conditions. A critical appraisal. Clin. Radiol 1990;42:47-49.

Source of Support: Nil; **Conflict of Interest:** None

Submitted: 12-02-2016; **Published online:** 07-03-2016