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KEY WORDS:

ACCURACY OF PREOPERATIVE DIAGNOSIS IN CASES OF ACUTE SURGICAL ABDOMEN

Dr. Prem Godara* PG Resident Student Department of General Surgery, R.N.T. Medical College, Udaipur (Raj.)*Corresponding Author

Dr. Rajesh Kumar PG Resident Student Department of General Surgery, R.N.T. Medical College, Udaipur (Raj.)

INTRODUCTION

The acute abdomen may be defined generally as an intra abdominal process causing severe pain and often requiring surgical intervention. Pain is often the dominant complaint in patients with acute abdomen. In patients with acute abdomen uncontrolled pain may produce an uncooperative patient, thus adding to the difficulty of clinical diagnosis. General causes of the acute abdomen may be divided into six large categories, viz inflammatory, mechanical neoplastic, vascular, congenital defects, traumatic. Acute abdomen comprises 5-10 % of people presenting as a general surgical emergency.[1] 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 of utmost importance, as most patients of acute abdomen do not require surgery. A thorough history followed by meticulous clinical examination is no doubt cornerstone of efficient patient management. However diagnosis based on clinical evaluation alone has been accurate in only 65% of cases[2] and is often associated with delay in diagnosis and treatment and unnecessary laprotomies are done due to considerable overlap of symptoms and signs of various disease entities causing acute abdomen.[3] The main objective of most studies is to reduce both, negative abdominal surgery rate and complication rate of delayed diagnosis such as appendiceal perforation. A reduction in the negative abdominal surgery rate must not cause increase in the complication rate.[4] Therefore, many diagnostic techniques have been recommended including; clinical scoring systems, USG, CT scans, MRI and laparoscopy.[5] Worldwide recent diagnostic modalities have demonstrated a reduction in the negative surgery rate from 12–29 % to 3–11%. Graded compression USG is cheap, quick and noninvasive diagnostic technique with an accuracy rate of 71– 90 % for diagnosis of acute appendicitis.[6] Diagnosis of acute appendicitis can some time be ascertained by clinical examination.[7] If accurate diagnosis is made in time, acute abdominal surgery can be treated easily, otherwise delay in diagnosis and treatment can lead to gangrene, perforation and diffuse peritonitis. Absolute and confirmed diagnosis is only possible at surgical exploration and histopathologic examination of the removed appendix.[8] 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 & is diagnostic in only about 10% of cases and is therefore being discouraged. USG has the advantages of being non-invasive, portable, cheap and no side effects. There has justifiably been an increasing reliance on CT imaging to guide management; the role of intravenous (i.v.) contrast-enhanced CT is well established, with evidence demonstrating improved speed and accuracy of diagnosis, with resultant reduction in hospital admission rates and length of stay, as well as reduced morbidity and mortality. In the present study, the various clinical presentations of non traumatic acute abdominal pain, the importance of the clinical examination in formulating a provisional diagnosis, the role of ultrasound examination in narrowing down the differential diagnosis and planning an appropriate surgical therapy and its outcome has been studied.

METHOD

Study design

This study was a prospective study of non-traumatic acute abdomen patients admitted in surgical ward in Ravindranath Tagore Medical College & Maharana Bhupal Govt. hospital, Udaipur (Rajasthan), a tertiary care center in north India.

Inclusion criteria : Patients of all age group and sexes presenting to surgical wards with acute abdomen and under going surgical management were included in the study.

Exclusion criteria: a. All patients with blunt and penetrating trauma to the abdomen. b. Patients with medical causes of acute abdomen. c. Patients with acute abdomen managed non-surgically (i.e. conservatively managed patients).

A specially designed detailed proforma was used to document and organize individual patient data which included clinical feature, laboratory investigations, X ray abdomen, abdominal ultrasound and CT. Data was collected by a structured and dedicated questionnaire cum proforma. Data was collected from all the respondents by direct interview after getting informed written consent from them or from their legal guardian. Further data regarding work up of patients was collected from basic blood investigations, X ray abdomen, abdominal ultrasound and CT and operative findings.

Statistical analysis was performed using tools like means, standard deviation and other statistical tools as appropriate.

RESULTS

The age at presentation ranged from 11 years to 93 years. Forth decade had the most number of incidence (21.73%) followed by 3rd decade accounting to 19.56%, collectively more common in 2nd to 5th decade of life. The mean age was 39.95 (SD=18.38). (Table 1)

The number of male patients present in this study were 73 (79.34%) and female patients were 19 (20.65%). Male patients thus constituted majority of patients in the present study. (Table 2)

Abdominal pain was the main symptom seen in all the patients (n=92) followed by vomiting (n=60). (Table 3)

In our study 7 patients had WBC count <4300 and 72 patients had WBC count in normal range of 4300-10800 and 13 patients had more then 10800 cell per cubic millimeter. (Table 4)

In our study serum amylase and serum lipase high diagnostic accuracy in intestinal obstruction . CRP and ESR are valuable

tools in diagnosis of intestinal perforation and acute appendicitis.

According to the clinical diagnosis distribution among the study patients, acute appendicitis accounting 39 (42.39%) patients. After that intestinal obstruction was found in 23 (25%)patients and intestinal perforation accounts 30 (32.6%) patients.

FPA is highly accurate in diagnosing intestinal perforation and moderately accurate in intestinal obstruction.(Table 5) No. value in diagnosis acute appendicitis.

In our study 59 USG were obtained of which 39 (94.87%) reported the pathology as acute appendicitis of these, 37 out of 39 were positive USG. 19 out of 22 patients had positive USG for intestinal obstruction Intestinal and perforation accounts 1 USG and 1 out of 1 was positive. (Table 6)

In our study accuracy of USG was 94.87% for acute appendicitis, for intestinal obstruction it was 86.36% and 100% for intestinal perforation.

In our study 12 abdominal CT scan were performed. 2 CT scan reported acute appendicitis, 9 reported intestinal obstruction and one reported the pathology as perforation peritonitis.(Table 7) and accuracy is 100% in diagnosis of acute appendicitis, intestinal obstruction, intestinal perforation.

Acute appendicitis was the most common cause of acute abdomen (42.39%). Other common causes of acute abdomen were intestinal obstruction (25%) and intestinal perforation (32.6%) in preoperative diagnosis.(Table 8)

Acute appendicitis was the most common cause of acute abdomen in 39 (42.39%) patients. Other common causes of acute abdomen were intestinal obstruction in 21 (22.82%) patients and Perforation peritonitis in 32 (33.69%) patients in post operative diagnosis.(Table 9)

DISCUSSION

Acute abdominal pain is one of the most common cause of admission in general surgical emergency. The term acute abdomen includes a long list of differential diagnosis which poses a great challenge to surgeons.

In our study age at presentation was from youngest being 11 and eldest was 93 years. Forth decade had the most number of incidence (21.73%) followed by 3rd decade accounting to 19.56%, collectively more common in 2nd to 5th decade of life. The mean age in our study was 39.95±18.38.

In our study results are similar to previous studies, because in our study acute appendicitis is most common cause of acute surgical abdomen and it most commonly occurs in young and middle age people.

A study [9] found that non-traumatic acute abdominal pain was more common in 2nd to 5th decade of life .The mean age was 38.0 (SD=15.4). The peak age at presentation was 3rd decade. Acute appendicitis is most common cause of acute surgical abdomen and it most commonly occurs in young and middle age people.

The number of male patients present in this study were 73 (79.34%) and female patients were 19 (20.65%). A study conducted by Kumar[9] showed that the male to female ratios in the most common diseases like acute appendicitis, perforative peritonitis and intestinal obstruction were 3:0 7.5:5.1, and 2.25:1 respectively. Most of cause of acute surgical abdomen eg. Appendicitis, intestinal perforation occurs in male population predominantly.

Abdominal pain was the main symptom seen in all the patients (n=92) followed by vomiting (n=60).

In our study 7 patients had WBC count <4300 and 72 patients had WBC count in normal range of 4300-10800 cell per cubic millimeter and 13 patients had more then 10800 WBC cell per cubic millimeter counts.The present study suggest WBC count is not reliable indicator of acute abdomen pathology.

During the present study period 84 abdominal radiograph were performed. In which 28 out of 30 are positive for intestinal perforation, 15 out of 23 positive for intestinal obstruction.

It suggest that FPA is highly accurate in diagnosing intestinal perforation and moderately accurate in intestinal obstruction. In our study 83 USG were obtained of which 39 (94.87%) reported the pathology as acute appendicitis of these, 37 out of 39 were positive USG. 19 out of 22 patients had positive USG for intestinal obstruction and Intestinal perforation accounts 1 USG and 1 out of 1 was positive. A study[65-66], while evaluating the role of immediate USG in acute abdomen showed that USG was more informative than plain X-Ray in 40% of their cases.USG is most preferable investigative modality for diagnosing acute appendicitis and advantage are less invasive technique, low cost, readily availability, no radiation exposure and safe in pregnant women.

In our study 12 abdominal CT scan were performed. 2 CT scan reported acute appendicitis, 9 reported intestinal obstruction and one reported the pathology as perforation peritonitis. CT has diagnosed correctly all the cases of acute appendicitis, intestinal obstruction and intestinal perforation. CT scan was thus found to be the most accurate diagnostic modality for acute abdomen in the present study.

Acute appendicitis was the most common cause of acute abdomen in 39 (42.39%) patients. Other common causes of acute abdomen were intestinal obstruction in 21 (22.82%) patients and Perforation peritonitis in 32 (33.69%) patients in post laparotomy diagnosis. A study[10] showed that the etiologies leading to laparotomy, in this study acute appendicitis was the commonest and observed in 56.8% of cases. Peritonitis and bowel obstruction were observed in 14.4% and 7.9% of cases respectively. Other studies, reported acute appendicitis to be the leading cause of acute abdomen in 55% cases, visceral perforation and bowel obstruction in 8-12% and 15-24% of cases of laparotomy, respectively.Results of this study is comparable with above study because most common cause of acute abdomen admitted in our hospital is acute appendicitis.

CONCLUSION:

The incidence of non traumatic acute abdomen has increased exponentially and constitutes majority of the cases admitted through emergency room. Early diagnosis and its management play an important role in a better clinical outcome. Our study reestablishes the simplicity, safety and accuracy of USG and CT scan. Acute abdomen diagnosis is based on complete history taking, physical examination and investigation tools including laboratory tests and radiological findings. The investigative modalities are good guidance and helpful to confirm the diagnosis. A preoperative accurate diagnosis prevents from negative laparotomies.

Plain abdominal radiographs have low sensitivity and specificity . Ultrasound has high sensitivity for appendicitis but suffers from low overall sensitivity and low specificity thus adds little advantage over properly performed clinical examination. USG gives reliable results for early diagnosis of acute appendicitis but, it is an operator dependent, needing extensive training. CT scan is the most accurate diagnosis in acute abdomen. Thus in acute abdomen clinical judgment is

the key to diagnosis and investigations are only supplementary and cannot replace clinical decision.

Table : 1 Distribution of patients according to age group in the present study

Age (years)	Number of patients	Percentage
11-20	18	19.56
21-30	16	17.39
31-40	15	16.3
41-50	20	21.73
51-60	9	9.78
61-70	11	11.95
71-80	2	2.17
ABOVE 80	1	1.08
TOTAL	92	100
MEAN±SD	39.95±18.38	

Table 2: Distribution according to gender in the present study

Gender	Number of patients	Percentage
Male	73	79.34
Female	19	20.65
Total	92	100

Table 3: Distribution according to symptoms in the present study

Chief complaints	Number of patients	Percentage
Pain abdomen	92	100%
Fever	14	15.21%
Vomiting	60	65.21%
Obstipation	43	46.73%
Abdominal Distention	31	33.69%

Table 4: Distribution according to WBC Count

WBC count range	Number Of Patients	Percentage
<4300	7	7.6
4300-10800	72	78.26
>10800	13	14.13
TOTAL	**92**	**100**

Table 5 : Plain Radiograph of Abdomen (FPA)

Disease	No. of FPA	Positive
Acute Appendicitis	31	0
Intestinal Obstraction	23	15
Intestinal Perforation	30	28

Table 6: Role of USG in Diagnosis of Acute Abdomen

Disease group	No of USG Examination done in operate patients	USG Abdomen results					
		True Positive	False Negative	Percentage	Sensitivity	Specificity	Accuracy
Acute appendicitis	39	37	2	94.87%	94.87	100	73.49
Intestina obstruction	23	19	4	86.36%	82.60	100	71.08
Intestinal perforation	1	1	0	100%	100	100	100

Table 7: Role of CT in Diagnosis of Acute Abdomen

Disease group	No of CT	CT Abdomen		
		Positive	Negative	Percentage
Acute appendicitis	2	2	0	100
Intestinal obstruction	9	9	0	100
Intestinal perforation	1	1	0	100

Table 8: Distribution of patients according to preoperative diagnosis in patient with acute surgical abdomen

Clinical diagnosis			Number of patients	Percentage
Acute appendicitis	Perforated	8	39	42.39
	Non perforated	31		
Intestinal perforation	Duodenal Perforation	18	30	32.6
	Enteric Perforation	9		
	Others	3		
Intestinal obstruction	Strangulated	13	23	25
	Non Strangulated	10		
TOTAL			**92**	**100**

Table 9: Postoperative diagnosis of acute surgical abdomen

Clinical diagnosis			Number of patients	Percentage
Acute appendicitis	Inflammed	39	39	42.39
	Non Inflammed	0		
Perforation Peritonitis	Perforation Present	31	32	33.6
	Negative Laparotomy	1		
Intestinal obstruction	Gangrenous	17	21	22.8
	Non Obstruction	2		
	Intestinal Perforation	2		
TOTAL			**92**	**100**

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