Original Research Article

Study on Clinical Features and Diagnosis of Acute Abdomen

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Abstract

Background: Acute abdominal pain in the cause of large numbers of Hospital admissions. Patients of any age group may be affected. It constitutes major portion of emergency surgical admissions. Urgent resuscitation and evaluation are required in these patients to come to a diagnosis so that immediate treatment can be started. **Materials and Methods:**In this study 1000 patients were studied. Their age, sex, symptoms, signs, laboratory findings and radiological features were taken into consideration. All these data were recorded and analysed.

Results: Patients of any age group and either sex, male or female were having acute abdomen. Out of the various causes of acute abdomen peptic perforation was the most common cause of acute abdomen and ureteric colic was the least common cause. Sudden severe abdominal pain was the main presenting feature in all the cases. **Conclusion:**Abdominal pain in the common symptom for a group conditions having acute abdomen. Urgent and proper diagnosis should be made to decrease morbidity and mortality of the patients.

Keywords: Acute Abdomen, Clinical Features, Diagnosis

Introduction

Acute abdomen includes a group of conditions having sudden severe abdominal pain requiring immediate diagnosis and care. In most of the cases urgent surgical intervention is needed. Some conditions are managed conservatively. Common causes of acute abdomen found in surgical wards are acute appendicitis, acute choleystitis, acute pancreatitis, hollow viscus perforation, intestinal obstruction, acute diverticulitis, acute cholangitis etc. Ureteric colic, biliary colic, testicular torsion also present with acute abdomen. Each and every case of acute abdomen should be urgently evaluated by history taking, examination and investigation. Delay should not be made in investigation and diagnosis because it increases the morbidity and mortality[1-3].

Materials and Methods

This study was conducted at Dept. of General Surgery, VSS Institute of Medical Science and Research, Burla, Sambalpur, Odisha, India from January 2020 to December 2020. A total of 1000 patients were studied.

Study Design: Prospective observational study.

Study Location: Dept. of General Surgery, VIMSAR, Burla (Tertiary Care Teaching Hospital)

Study Duration: January 2020 to December 2020.

Sample Size: 1000 patients

Subject and Selection Methods: The study population was drawn from consecutive patients of acute abdomen presented to surgery department.

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Inclusion Criteria

1. Patients presenting with acute abdominal pain.
2. Either sex
3. All age groups.

Exclusion Criteria

1. Pregnant patients
2. Acute abdominal pain due to trauma
3. Gynaecological causes of acute abdomen.

Procedure Methodology

After written informed consent was obtained and approval of ethical committee, well designed questionnaire was used to collect the data. The data included age, sex, symptoms, signs, laboratory, and radiological findings. Diagnosis of acute abdomen was made based on clinical features, laboratory, and radiological findings. Laboratory tests were done at the regional diagnostic centre and dept. of Biochemistry of VIMSAR, Burla. X-ray and Ultrasonography were done at the Dept. of Radiodiagnosis of VIMSAR, Burla. Confirmation was done from operative findings where operation was performed. Operation done after proper resuscitation of the patients.Patients who were critically ill and unstable in those cases only damage control surgery was done. In stable patients defermitive surgery was done. Acute cholecystitis, acute pancreatitis and ureteric colic were managed conservatively after consultation with medicine specialist and urologist.

Statistical Analysis

The detailed history, clinical signs, laboratory and radiological findings and operative findings were noted in prescribed proforma. Subsequently data's were compiled for statistical analysis.

Results

In our study of 1000 cases (Table – 1) peptic perforation (both gastric and duodenal perforation) was the most common cause of acute abdomen, 140 cases (14%). Second most common cause was acute appendicitis, 129 cases (12.9%). Lowest number of cases were found in ureteric colic, 29 cases (2.9%)Other causes of acute abdomen, we got in our study were large bowel obstruction 127 cases (12.7%),

small bowel obstruction 122 cases (12.2%), appendicular abscess 108 cases (10.8%), acute cholecysitits 82 cases (8.2%), obstructed/ strangulated hernia 80 cases (8%), appendicular lump 52 cases (5.2%), ruptured liver abscess 48 cases (4.8%), acute pancreatitis 42 (4.2%) and small bowel perforation 41 cases, (4.1%). Out of the 140 cases of peptic perforation we get 99 male and 41 females. Acute appendicitis also affected more male than female (68:61). In all cases of acute abdomen number of male patients surpasses the number of female patients except in acute cholecystitis where the ratio is reverse (22:60 or 1:2.72) because gall stone disease affects female more than male. Table 2 shows that in our study most of the patients were in the age group of 30-39 yrs. Lowest number of patients were in the age group of 0-9 yrs. In all age group there was male predominance.

Table 1:Causes and sex incidence of 1000 patients of acute abdomen

SL. No.	Causes	No. of Males	No. of Females	Total (%)
1	Peptic perforation	99	41	140 (14%)
2	Acute Appendicitis	68	61	129 (12.9%)
3	Large bowel obstruction	70	57	127 (12.7%)
4	Small bowel obstruction	71	51	122 (12.2%)
5	Appendicular abscess	60	48	108 (10.8%)
6	Acute cholecystitis	22	60	82 (8.2%)
7	Obstruction/ Strangulated Hernia	70	10	80 (8.0%)
8	Appendicular lump	30	22	52 (5.2%)
9	Ruptured Liver abscess	28	20	48 (4.8%)
10	Acute Pnacreatitis	32	10	42 (4.2%)
11	Small bowel perforation	30	11	41 (4.1%)
12	Ureteric Colic	15	14	29 (2.9%)

Table 2: Age and sex incidence in 1000 patients of acute abdomen

Age group in years	No of male patients (%)	No. of female patients (%)	Total (%)
0-9	14 (1.4%)	4(4%)	18 (1.8%)
10-19	58 (5.8%)	49(4.9%)	107(10.7%)
20-29	91(9.1%)	59(4.9%)	150(15%)
30-39	121(12.1%)	89(8.9%)	210(21%)
40-49	101(10.1%)	71(7.1%)	172(17.2%)
50-59	112(11.2%)	71(7.1%)	183(18.3%)
60-69	69(6.9%)	49(4.9%)	118(11.8%)
70-79	31(3.1%)	11(1.1%)	42(4.2%)

Table 3: Symptoms and Signs of 1000 patients of acute abdomen (Figures indicate the number of patients)

	Peptic perforation	Acute Appendicitis	Large bowel obstruction	Small bowel obstruction	Appendicular abscess	Acute cholecystitis	Obstruction/ Strangulated Hernia	Appendicular lump	Ruptured Liver abscess	Acute Pnacreatitis	Small bowel perforation	Ureteric Colic
Symptoms												
Abdominal pain	140	129	127	122	108	82	80	52	48	42	41	29
Vomiting	39	125	60	122	108	80	80	30	28	40	41	10
Absolute constipation	99	30	127	122	108	60	80	41	48	35	41	0
Abdominal distention	102	0	127	122	80	20	72	6	48	40	41	0
Fever	121	99	30	20	108	80	20	21	48	10	41	0
Signs												
Abdominal distention	102	0	127	122	80	20	72	6	48	10	41	0
Tenderness	140	129	127	122	108	82	80	52	48	42	41	20
Guarding/ rigidity	140	120	30	20	100	50	0	0	48	0	41	0
Obliteration of liver dullness	100	0	30	20	0	0	0	0	0	0	30	0
Free fluid	120	0	30	30	0	0	0	0	48	0	41	0
Absent bowel sound	121	60	30	20	40	10	41	10	48	10	41	0
Lab Findings												
Anaemia	40	30	50	40	35	20	15	25	10	15	10	2

(Hb<10 gm/dl)												
Leucocytosis (TLC>11000 /cumm	140	129	70	68	108	80	50	30	40	37	40	1
Hyperglycemia (FBS>125mg /dl)	14	3	10	9	6	7	7	5	8	6	2	0
Hyponatremia (Sr Sodium<135 mmol/L)	25	5	25	50	3	2	4	1	6	5	10	0
Hypokalemia (Sr potassium<3.5mmol/L	20	0	10	20	4	3	4	1	5	3	9	0
Low Sr total protein(<6gm /dl)& albumin(<3.6 gm/dl)	100	99	101	95	96	70	68	40	30	30	29	15
Raised Sr amylase(>100 IU/l &Sr lipase (>60 IU/l)	30	10	20	0	10	0	0	0	0	42	0	0
X-Ray												
Free peritoneal gas	99	0	30	20	0	0	0	0	0	0	30	0
Dilated bowel loops with air fluid level	69	0	127	122	10	0	70	0	40	10	30	0
Ground glass appearance	130	0	0	0	0	0	0	0	46	5	41	0
USG												
USG findings suggestive of pathology	140	128	127	122	100	82	78	52	48	35	41	29

Clinical feature and investigation findings are shown in table – 3.

Clinical Features

The main presenting feature was sudden onset of severe abdominal pain which was found in 100 % of cases. Site and character of pain depends on the organ affected. Typical shifting of pain was found in very few cases of appendicitis. In small or large gut obstruction, the pain was colickytype. In acute cholecystitis colicky pain is felt in righthypochondrium, in acute pancreatitis there was epigastric pain referred to back and relieved by stooping forward position. In ruptured liver abscess right hypochondriac pain ultimately becomes generalised. There was intercostal tenderness in majority of cases. In ureteric colic pain was felt from loin to groin with radiation of pain depends upon the site of obstruction. Vomiting mostly occurred in appendicular pathology and intestinal obstruction. It was seen in 125 cases (96%) of acute appendicitis, 100% cases of appendicular abscess and 30 cases (57%) of appendicular lump. In this study we noticed that vomiting is more common in small gut obstruction (100%) as compared to large gut obstruction (47%) cases. Another symptom, absolute constipation was seen in 100% cases of intestinal obstruction. It was also found in other cases of acute abdomen after development of generalised peritonitis and paralytic ileus. Distention of abdomen was found in intestinal obstruction cases and in late cases of peritonitis. In intestinal obstruction cases distension was due to gaseous distention and in peritonitis cases it was due to free peritoneal fluid collection. It was seen in 100% cases of small and large gut obstruction and small gut perforation and ruptured liver abscess. It was seen in 72 % cases of peptic perforation, 90 % cases of obstructed hernia and 74 % cases of appendicular abscess. Abdominal tenderness was found in all the cases of acute abdomen, but site varies depending on the site of pathology and also the severity was more in inflammatory cases then intestinal obstruction cases. Abdominal guarding and rigidity were found in cases where parietal peritoneum was involved by inflammation. It was found in 100% cases of peptic perforation, 93 % cases of acute appendicitis, 92% cases of appendicular abscess and 100 % cases of small gut perforation, appendicular perforation and ruptured liver abscess. It was seen in some cases of small and large gut obstruction where there was gangrene and perforation leading to peritonitis.Obliteration of liver dullness was found in cases of hollow viscous perforation like peptic perforation 71 % and small gut perforation 73%. Free peritoneal fluid was mostly seen in cases of peptic perforation (85%), ruptured liver abscess and small bowel perforation 100 % each.

Absent bowel sound was found in 86% cases of peptic perforation, 46% cases of acute appendicitis, 23% cases of large gut obstruction, 16% cases of small gut obstruction, 37% of appendicular abscess,

12% cases of acute cholecystitis, 51% cases of obstructed hernia, 19% cases of appendicular lump, 100% cases of ruptured liver abscess, 23% cases of acute pancreatitis and 100% cases of small gut perforation.

Diagnosis

After thorough clinical examination investigation done, some of which helped to know the diagnosis and other tests helped in the management of the patients. Among the blood tests, anaemia (Hb<10gm/dl) was found in those cases having other co-morbidity like malignancy and chronic kidney disease (CKD)Leucocytosis was found more commonly and with higher values in infective cases like peptic perforation (100%), acute appendicitis (100%), appendicular abscess 100% and small bowel perforation 97%.

Hyponatremia and hypokalaemia were found mostly in cases having frequent vomiting like intestinal obstruction, appendicitis and ruptured liver abscess. Low serum total protein and albumin was found in most of the cases, though it was not related to the disease processes directly there may be pre-existing nutritional hypoproteinemia.

Cases like peptic perforation and intestinal obstruction were diagnosed from erect abdominal x-ray only. Other cases like appendicitis, appendicular abscess or lump and ruptured liver abscess need Ultrasonography for diagnosis.

In erect abdominal x-ray free peritoneal gas was found in 70% cases of peptic perforation and 73% cases of small gut perforation.

Dilated bowel loops with air fluid level was seen in cases of intestinal obstruction, ground glass appearance was found in cases having peritoneal collection. In this study total 1000 patients have been studied, out of them 795 patients had undergone some operations, 205 patients were managed conservatively. Out of them 82 patients had acute cholecystitis and cholecystectomy was done after 6 weeks, 52 patients were diagnosed to be having appendicular lump and interval appendicectomy was done after 6 weeks, 42 patients had acute pancreatitis and 29 patients had ureteric colic who were managed conservatively.

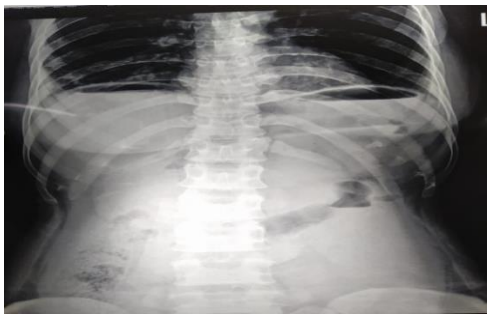

Fig 1: X-ray showing free gas under domes of diaphragmto sigmoid volvulus

Fig 2: X-ray showing large bowel obstruction due to duodenal perforation

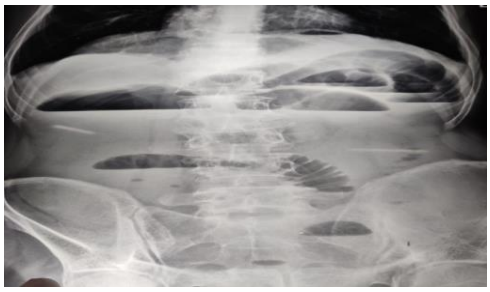

Fig 3: X-ray showing multiple air fluidLevel due to small bowel obstruction

Fig 4: Small bowel perforation

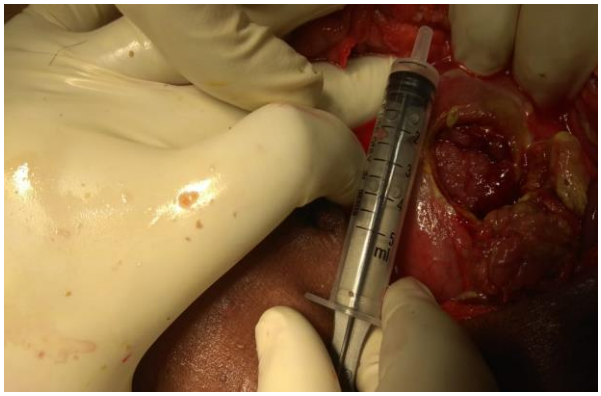

Fig 5: Gastric Perforation

Discussion

Acute onset of severe abdominal pain is usually the chief complaint of most of the cases of acute abdomen[1-4]. There may be some clue to the diagnosis from the site and nature of pain[5,6].Pain usually occurs at the site of abdominal pathology, but the exception is that, in referred pain the site of pathology is different from the site of pain. Pain is referred to a site having same segmental innervation. For example, in diaphragmatic irritation there is pain at the tip of the shoulder[7]In our study the most common cause of acute abdominal pain was peptic perforation (14%) followed by acute appendicitis (12.9%). In an observational study by Tariq et al from Pakistan the most common cause of acute abdomen was acute appendicitis followed by acute pancreatitis.In acute abdomen besides abdominal pain there may be other symptoms like vomiting, fever, absolute constipation, distension of abdomen or jaundice[6-8].Vomiting usually proceeds pain in medical conditions like acute gastroenteritis and it follows pain in surgical condition like acute appendicitis [9,10].Vomiting is also seen in other condition like acute cholecystitis and intestinal obstruction. In intestinal obstruction vomiting is more frequent in small intestinal obstruction then large intestinal obstruction. Absolute constipation is a feature of mechanical bowel obstruction. In our study we got absolute constipation in 100% cases of small or large bowel obstruction. Fever is a feature of inflammation. It is seen is cases of acute abdomen where there is either hollow viscus perforation or infective focus in the abdominal cavity like appendicitis, appendicular abscess or ruptured liver abscess. Abdominal distention is found in cases of peritonitis[7] with paralytic ileus or cases of intestinal obstruction. Guarding and or rigidity indicates underlying peritonitis.Obliteration of liver dullness is found in cases of hollow viscus perforation. Though there are various tools to diagnose acute abdomen, clinical features[11] is very important with which biochemical and radiological findings are correlated to reach a correct diagnosis of acute abdomen and find out the cause. In laboratory investigation leucocytosis was found in inflammatory conditions like appendicitis, cholecystitis, pancreatitis, or peritonitis due to any cause. In serum electrolytes hyponatremia and hypokalaemia was found in cases where there occurred vomiting and loss of electrolytes. Raised Serumurea&creatinine was found in cases where there was AKI (Acute Kidney Injury) due to dehydration and sepsis. Serum total protein and albumin was low in most of the cases. Raised serum amylase and lipase were found in acute pancreatitis. Free peritoneal gas which is diagnostic of hollow viscus perforation was not found in all the cases[12,13]. It was only seen in 70% cases of peptic perforation and 73% of small gut perforation. Dilated bowel loops with air fluid levels were suggestive of intestinal obstruction[14].In cases like appendicitis or ruptured liver abscess where x-ray can't diagnose the cause USG was diagnostic. One limitation of USG is that fat, gas and bone interfere with diagnosis which can be overcome by CT scan.

Conclusion

In this study we have studied 1000 cases of acute abdomen admitted to the surgery ward of VIMSAR, Burla. Abdominal pain from trauma has been excluded from the study group. In this study we observed that typical symptoms and signs are found in only 60-70% cases. So if not evaluated properly the rest of the cases can be missed leading to detrimental effect. Correct and timely diagnosis is especially

important in each and every cases of acute abdomen to decrease the morbidity and mortality of patients.

References

1. Agboola JO, olatoke SA, Ratiman GA. Pattern and Presentation of acute abdomen in a Nigerian Teaching Hospital. Niger Med J. 2014;55:266-70**.**
2. Kasmin RA, Nowicki TA, Lourtney DS, Powers RD. Pearls and Pitfalls in the Emergency Department Evaluation of Abdominal Pain. Emerg Med Clin North Am.2003;21:61-72.
3. Laurel H, Harisson, LE, Gunnarsson U. Acute Abdominal pain among Elderly Patients. Gerontology. 2006;52:339-44.
4. Irvin TT.Abdominal Pain: A Surgical Audit of 1190 emergency admissions. Br. J Surg. 1989;76:1121-5.
5. Brewes RT, Golder GJ, Hitch DC, et d. Abdominal pain: An analysis of cases in a university Hospital Emergency Room, Am J Surg. 1976;131:219.
6. Dietnelm AG, Stanley RJ, Rabbin MJ. The acute abdomen in sabistonDC(ed) textbook of Surgery, 16thed, philalelphia WB Saundess, 2001,802-815p.
7. Gilbert JA, Kamath PS. Spontaneous bacterial peritonitis, anupdate, Mayo Clin Proc. 1995; 70:365.
8. Ohene-Yeboch M. Acute Surgical admissions for abdominal pain in adults in Kumasi, Ghana, ANZ J Surg. 2006;76:898-903.
9. Steinhuben FV. Medical condition mimicing the acute surgical abdomen Med Clin north AM. 1973; 57:1559.
10. Owesis BJ, Hamit HF. Appendicitis in the elderly 433 surg. 1977; 187:392.
11. Staniland JR, Ditchburn J, DeDombal FT. Clinical Presentation of acute abdomen: Study of 600 patients Br. Med J. 1972;3:393-8.
12. Scaglione, Mariano, Linsenmaier, Ulrich, Schueller, Gred. Emergency radiology of the abdomen: imaging features and differential diagnosis for a timely management approach springs science &Burimch media, 2012, 2p.
13. Miller RE, Nelson SW. The reoentgenologic demonstration of tiny amount of free intraperitoneal gas: Experimental and Clinical Studies, AJR. 112:574.
14. Caterino S, Cavallini M, Meli C,Murate G, Schiffinol, Lotito S et al. Acute abdominal pain in emergency surgery. Clinical epidemiologic study of 950 patients. Anm Ital Chir. 1997;68:807-17.

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