



A PROSPECTIVE STUDY ON CLINICAL SPECTRUM AND INTRAOPERATIVE FINDINGS IN PATIENTS WITH ACUTE ABDOMEN COMING TO TERTIARY CARE HOSPITAL

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ABSTRACT

Background – The term acute abdomen refers to the presence of severe abdominal pain developing suddenly or over a period of several hours, it is one of the most commonly encountered emergencies in practice of general surgery. The sudden onset of severe abdominal pain requiring emergency medical or surgical treatment can be a symptom of various disease processes. Some of these process can be life threatening and several of these require rapid diagnosis and surgical intervention to avoid significant morbidity and mortality. **Methods And Objectives**- This prospective study was conducted among 80 patient's in general surgical wards and causality presented with non-traumatic acute abdomen and underwent respective surgeries at KVG MEDICAL COLLEGE, SULLIA, from April 2022 to march 2023. Objectives of this study are-

1. To determine the incidence of acute abdominal emergencies requiring surgical intervention.
2. To correlate clinical diagnosis with ultrasound findings and intraoperative findings of acute abdomen.

Results- Among the study of 80 patients, 80% patients underwent emergency surgical intervention, males have higher incidence of acute abdomen between the age group of 21 to 30 years. Acute appendicitis constituted the most common cause of acute abdomen followed by perforation peritonitis followed by intestinal obstruction. **Conclusion**-By proper history taking and clinical examination with supportive imaging findings we can make accurate diagnosis of acute abdomen early, so life can be saved by surgical intervention early.

KEYWORDS : Acute abdomen, ultrasound findings, intra operative findings, acute appendicitis, perforation peritonitis, intestinal obstruction

INTRODUCTION –

Acute abdomen is defined as an abnormal condition characterized by sudden onset of severe pain in the abdomen. It requires immediate evaluation, diagnosis and may require surgical intervention¹. Abdominal pain is a very common complaint of patients attending medical emergency room, which accounts for 5% - 10% of all emergency department visits². Acute abdomen can be the manifestation of a wide range of disease processes, which include acute exacerbation of chronic diseases like peptic and duodenal ulcers, pancreatitis, inflammatory bowel disease and acute conditions like appendicitis, hollow viscus perforation, volvulus, urological and gynecological problems common non-surgical conditions include metabolic and cardiac emergencies³.

Despite extensive evaluation some patients usually remained with a non-specific cause but now with latest radiological imaging advances that number has decreased⁴. This study was conducted to find out the incidence of acute abdominal emergencies requiring surgical intervention, and correlate clinical diagnosis with ultrasound findings and intraoperative findings of acute abdomen.

MATERIALS AND METHODOLOGY-

This is an institution based prospective study conducted among 80 patients in general surgery wards and causality presented with non-traumatic acute abdomen and underwent respective surgeries at KVG Medical college, Sullia from April 2022 to march 2023. This study was approved by the institutional ethics committee.

Inclusion criteria-

All adult patients presenting with non-traumatic acute abdominal pain requiring surgical intervention are included.

Exclusion criteria-

Patients with traumatic acute abdomen, patients who do not give consent for surgery and patients with acute abdomen due to urological and gynecological disorders are excluded.

Method Of Data Collection-

Patients detailed history (onset, duration, character of pain, radiation, intensity, periodicity, type, etc.) will be taken and examination (guarding, rigidity, rebound tenderness, distortion in abdominal anatomy, lump, scar, shape of abdomen, pigmentation)

done and clinical findings are documented. Basic blood investigations were done for all patients. Radiological investigations like ultrasonography (USG) and computer tomography (CT) scan were done on appropriate indication, the patients were asked about the severity of pain and it was objectively assessed with Visual Analogue Scale (VAS) of 0 to 10. Intraoperative findings in each case will be collected and noted.

Statistical Analysis:

The data will be entered into MS Excel 2007 version and analysis done.

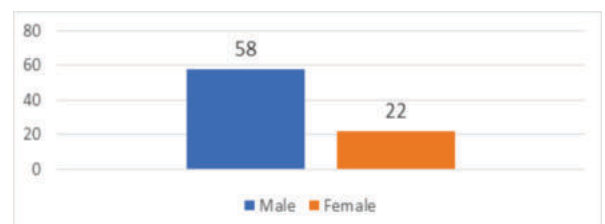
RESULTS-

Study conducted at KVG Medical College and hospital, Sullia, Karnataka India from April 2022 to March 2023. A total of 80 patients were admitted with acute abdominal emergencies, these 80 patients were reviewed in this study. Among a total of 80 patients most of the subjects (62.5%) were of 20-30 years of age group, and Majority (72.5%) were males.

Age wise distribution of study subject

Gender	No of Subject	Percentage
<20	20	25%
20-30	50	62.5%
>30yrs	10	12.5%
	80	100%

Among study subjects most of subjects were males (72.5%)



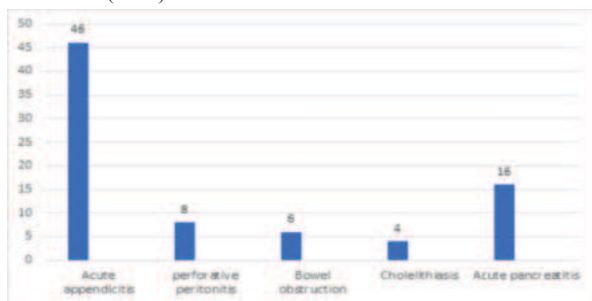
Gender wise distribution of study subject

Out of all the patients main complaint is the pain abdomen (100%) followed by the fever (85%) and nausea (80%). 75% of the patients had vomiting and 60% of the patients had altered bowel habits.

SIGNS AND SYMPTOMS	FREQUENCY	PERCENTAGE
Pain abdomen	80	100%
Fever	68	85%
Nausea	64	80%
Vomiting	60	75%
Decreased appetite	52	65%
Altered bowel habits	48	60%
Distension of abdomen	28	35%
Weight loss	16	20%

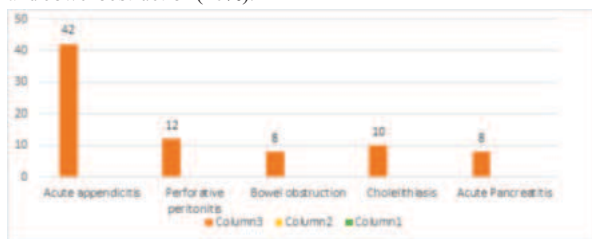
Distribution Of Symptoms Among The Study Subjects

Acute appendicitis was the most common cause which constitutes 57.5% followed by perforative peritonitis (10%) and bowel obstruction (7.5%).



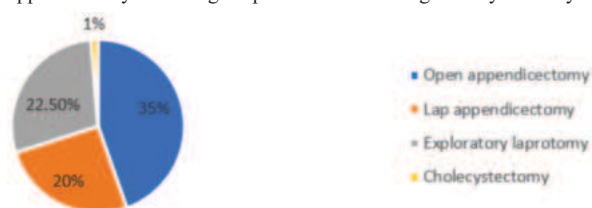
Distribution of the clinical diagnosis among the study subject

On ultrasound examination most of the subjects were diagnosed as acute appendicitis (52.5%) followed by perforative peritonitis (15%) and bowel obstruction (10%).



Distribution of diagnosis made from ultrasound examination

22.5% of the patients diagnosed to have perforative peritonitis and bowel obstruction underwent exploratory laparotomy followed by definitive procedure depending on the intraoperative findings.35% of the patients diagnosed to have acute appendicitis underwent open appendectomy and 20% of the patients underwent laparoscopic appendectomy other surgical procedures including cholecystectomy.



Frequency of type or surgeries performed

Intra operative findings showed that the most of the subjects were having acute appendicitis (55%) followed by perforative peritonitis (12.5%) followed by small and large bowel obstruction (10%).

Intra operative findings	Frequency	Percentage
Acute appendicitis	44	55%
Duodenal perforation	4	10%
Gastric perforation	4	10%
Illeal perforation	2	5%
Small bowel obstruction	4	10%
Large obstruction bowel	4	10%
Cholecystectomy	2	5%

Distribution of the diagnosis made from intraoperative findings

Post-Operative Result	Frequency	Percentage
Cured	58	72.5%
Relieved	4	5%
Expired	2	2.5%

Details of the post-operative results

Diagnosis of acute appendicitis by clinical examination matched with that of intraoperative diagnosis of acute appendicitis showed a sensitivity of 100%, specificity of 94.4%, positive predictive value of 95.6%, negative predictive value of 100%.

Clinical diagnosis of acute appendicitis	Intra operative diagnosis of acute appendicitis		Total
	Yes	No	
Yes	44	2	36
No	0	34	34
Total	44	36	80

Sensitivity & Specificity of clinical examination in diagnosing acute appendicitis.

Diagnosis of perforative peritonitis by clinical examination matched with that of intraoperative diagnosis of perforative peritonitis showed a sensitivity of 80%, specificity of 100%, positive predictive value of 100% and negative predictive value of 97.2%.

Clinical diagnosis of perforative peritonitis	Intra operative diagnosis of perforative peritonitis		Total
	Yes	No	
Yes	8	0	8
No	2	70	72
Total	10	70	80

Sensitivity & Specificity of clinical examination in diagnosing Perforative peritonitis

Diagnosis of bowel obstruction by clinical examination matched with that of intra operative diagnosis of bowel obstruction showed a sensitivity of 75%, specificity of 100%, positive predictive value of 100%, and negative predictive value of 97.2%.

Clinical diagnosis of bowel obstruction	Intra operative diagnosis of bowel obstruction		Total
	Yes	No	
Yes	6	0	6
No	2	72	74
Total	8	72	80

Sensitivity & Specificity of clinical examination in diagnosing Bowel obstruction

Diagnosis of acute appendicitis by ultrasound examination matched with that of intra operative findings of acute appendicitis showed a sensitivity of 95.4%, specificity of 100%, positive predictive value of 100% and negative predictive value of 94.7%.

Ultrasound diagnosis of acute appendicitis	Intra Operative diagnosis of acute appendicitis		Total
	Yes	No	
Yes	42	0	42
No	2	36	38
Total	44	36	80

Sensitivity & Specificity of Ultrasound examination in diagnosing acute appendicitis.

Diagnosis of perforative peritonitis by ultrasound examination matched with that of intraoperative findings of perforative peritonitis showed a sensitivity of 100%, specificity of 97.1%, positive predictive value of 83.3% and negative predictive value of 100%.

Ultrasound diagnosis of perforative peritonitis	Intra operative diagnosis of perforative peritonitis		Total
	Yes	No	
Yes	10	2	12
NO	0	68	68
Total	10	70	80

Sensitivity & Specificity of Ultrasound examination in diagnosing perforative peritonitis.

Diagnosis of bowel obstruction by ultrasound examination matched with that of intraoperative diagnosis of bowel obstruction showed a sensitivity of 100%, specificity of 100%, positive predictive value of 100% and negative predictive value of 100%.

Ultrasound diagnosis of bowel obstruction	Intra Operative diagnosis of bowel obstruction		Total
	Yes	No	
Yes	8	0	8
No	0	72	72
Total	8	72	80

Sensitivity & Specificity of Ultrasound examination in diagnosing bowel obstruction.

Results in nut shell:-

1. 80% of the patients with the acute abdomen underwent emergency surgical intervention.
2. Most of the patients with acute abdomen are aged between 20-30 years, majority were males.
3. Acute appendicitis constituted the most common cause of acute abdomen followed by perforation peritonitis followed by intestinal perforation.

DISCUSSION-

The term acute abdomen refers to the signs and symptoms of abdominal pain and tenderness. This situation often represents an underlying surgical problem that requires prompt diagnosis and surgical treatment. While the ready availability of diagnostic studies such as ultra-sonogram, computed tomography (CT) scans has added greatly to our ability to accurately diagnose most of the conditions responsible for the acute abdomen, the mainstay for diagnosis remains a good history and physical examination complemented by laboratory and radiologic studies as appropriate. In addition, many conditions that are not surgical or even centered in the abdomen can also cause this presentation⁷. A prompt and accurate diagnosis is necessary in order to select the appropriate therapy, which may be a laparoscopy or laparotomy.

Age, gender, and a history of prior abdominal surgical procedures are associated with different problems causing the acute abdomen. Certain diseases like appendicitis and mesenteric adenitis are more common in the young while biliary tract disease, diverticulitis, and intestinal ischemia are more common in older populations⁸.

A focused history and physical examination and indicated laboratory and imaging studies will then allow for the correct diagnosis and guide appropriate therapy. While imaging studies have added greatly to the accuracy of the diagnosis of causes of the acute abdomen, a thorough history and careful physical examination remain the mainstays of evaluation. The need for prompt surgical treatment of those causes of the acute abdomen that require operation mandates an expeditious evaluation so that the proper therapy can be carried out⁷.

In a study conducted by Dr.RiteshGajjar, Dr.P.B.Gupta et al at government medical college, Surat among 204 patients with acute abdomen at government medical college, Surat by Dr.Ritesh Gajjar, Dr.P.B.Gupta et al, 52% of the patients were in the age group of 15 to 30 years while 34% patients were in the age group of 31 to 50 years and only 14% were above 50 years of age group⁸.

In this study of non-traumatic acute abdomen 62.5% of patients were among the age group of 20 to 30 years. Minimum age of the patient in our study was 14 years and the maximum age was 82 years.

An audit done by Irvin on 1190 acute surgical admissions of which 47% were operated upon⁹. A Study conducted by the Chirkode R et al among 50 patients at Gulbarga Institute of Medical Sciences, of which 25.8% of patients underwent surgery and concluded the importance of developing the skill of identifying patients with an "acute abdomen" requiring immediate surgical intervention¹⁰.

Where as in our study 80% of the patients with the acute abdomen underwent emergency surgical intervention.

Jain R, Gupta V observed in a prospective study of epidemiology and clinical presentation of non-traumatic acute abdomen cases in a tertiary care hospital of central India that pain abdomen (100%) was a major symptom present in patients with acute abdomen followed by vomiting (71.4%), abdominal distension (50.0%), constipation (48.0%), fever (41.8%) and diarrhea (2.0%)¹¹.

Similarly a study of. Outcome of emergency surgical operations performed for nontraumatic acute abdomen among adults in Mikelle hospital, Tigray Euthopia. Conducted among 255 adult patients by Berhane Y et al showed that abdominal pain and vomiting were the most frequent symptoms where as 38% had constipation and nausea¹².

Similarly in our study we found that Out of all the patients main complaint is the pain abdomen (100%) followed by the fever (85%) and nausea (80%). 75% of the patients had vomiting and 60% of the

patients had altered bowel habits.

In the studies conducted by Agboola et al and Tariq et al the most common cause Of acute abdomen was acute appendicitis followed by the acute pancreatitis, intestinal obstruction and duodenal perforation^(13,14).

Similarly in our study the most common cause of acute abdomen clinically was acute appendicitis (57.5%) followed by the perforation peritonitis (10%) and intestinal obstruction (7.5%) consistent with the above conducted studies.

In our study clinically diagnosed patients underwent ultrasonogram examination most of the subjects were diagnosed as acute appendicitis (52.5%) followed by perforative peritonitis (15%) and bowel obstruction (10%). Ultra sonogram confirmed the clinical diagnosis in most of the subjects.

Ultra sonogram was highly accurate in diagnosing the exact cause of acute abdomen with high overall positive predictive accuracy of 95.6%, negative predictive value of 100%, and specificity of 94.4% and sensitivity of 100%.

In a study conducted by Basim R.Gadban among 89 adult patients with non-traumatic acute abdominal pain at Baghdad teaching hospital, results of this study suggested that ultrasound is useful in the investigation of patients with acute non-traumatic abdominal pain and concluded Sonography should be the first imaging technique in adult patients for the diagnosis of acute abdominal pain. CT scan should be used as a complementary study for suspected abdominal cases¹⁵.

In a similar study conducted by the Abbas SM et al showed that Imaging such as ultrasound is helpful for detection of the cause of lower abdominal pain; in clinical centers where CT scan is routinely performed it reduces the rate of negative appendicectomy¹⁶.

A prospective diagnostic accuracy study of imaging strategies for detection of urgent conditions in patients with acute abdominal pain was conducted by Lameris W et al. This study results shows the initial clinical diagnosis with false positive urgent diagnosis were significantly reduced after ultrasonography and CT¹⁷.

Final diagnosis arrived by the intra operative findings and compared with the accuracy of the imaging studies which showed imaging studies like ultrasonogram has highest sensitivity, positive and negative predictive values in diagnosing the patients with acute abdomen.

Dr.M Sri Hari Rao et al conducted a prospective study of acute abdomen – comparison of emergency ultrasound abdomen and laparotomy findings. In this study they compared findings of emergency ultrasound with laparotomy findings in all the cases and found similar results of sensitivity (81.81%) and positive predictive value of (95.45%)¹⁸.

Similar to the above study Dr.Mahadevaswamy K M et al correlated the clinical findings and sonological findings with intraoperative findings and found ultra-sonogram has high sensitivity (93.10%), positive predictive value (96.42%) and negative predictive value (90.91%)¹⁹.

By the above studies we therefore recommend use of ultrasonography as the initial investigation in the diagnostic investigation of patients presenting with acute abdominal pain, with CT after negative or inconclusive ultrasonography, results in the best sensitivity and lowers exposure to radiation.

CONCLUSION–

According to this study we found that about 80% of the patient with acute abdomen require emergency surgical intervention. Most of the patients were of 20-30 years of age group and majority were males. Acute appendicitis was the most common cause of acute abdomen followed by hollow viscus perforation. Apart from clinical diagnosis, laboratory tests, radiological investigations are helpful to arrive at an accurate diagnosis of acute abdomen. Hence by this we can conclude that by proper history taking and clinical examination with supportive imaging findings we can make accurate diagnosis of acute abdomen early, so life can be saved by surgical intervention early.

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