

## To study the epidemiology and clinical profile of adult patients with acute abdominal pain attending tertiary care hospital

Tripta S Bhagat<sup>1</sup>, Amit Agarwal<sup>2\*</sup>, Rajiv Verma<sup>3</sup>, Apoorv Goel<sup>4</sup>, Prakhar Garg<sup>5</sup>, Shalabh Gupta<sup>6</sup>

<sup>1</sup>Professor, <sup>2,4,5</sup>Assistant Professor, <sup>3</sup>Associate Professor, <sup>6</sup>Professor and HOD, Dept. of Surgery, Santosh Medical College and Hospital, Ghaziabad, Uttar Pradesh, India

**\*Corresponding Author: Amit Agarwal**

Email: [surg\\_amit@hotmail.com](mailto:surg_amit@hotmail.com)

### Abstract

**Introduction:** Acute abdomen is a very common problem in emergency department.

**Aims and Objectives:** This study aims to find out the clinical and epidemiology profile of acute abdominal pain among patients attending emergency department of Santosh Medical College Ghaziabad.

**Materials and Methods:** A tertiary care hospital based, cross-sectional study was conducted from January 2018- April 2019, among patients presenting with acute abdominal pain to Santosh Medical College Ghaziabad, India. Data was entered on a standard data collection sheet after obtaining a written informed consent.

**Results:** Out of 1200 patients admitted via the Emergency Department at the Hospital, 200 (16.6%) were admitted with atraumatic acute abdominal pain. Out of 200, 120(60%) were due to Surgical causes and 80 due to non-surgical causes. Most consistent symptom and sign were pain abdomen and abdominal tenderness respectively. Acute cholecystitis was the most common etiology of acute abdominal pain (35.8% cases), followed by, Renal Stones (30.5%), Acute Appendicitis (17.5%) and Intestinal Obstruction (16.67%) respectively.

**Conclusion:** About 16.60% of all emergency admissions were due to acute abdominal pain and about 60.0% of all atraumatic acute abdominal pain was due to surgical cause. Acute cholecystitis was the most common cause of surgical abdominal pain.

**Keywords:** Acute abdominal pain (AAP), Right hypochondrium (RHC), Epigastrium, Hypochondrium.

### Introduction

Acute Abdominal Pain (AAP), is frequently defined as pain with nontraumatic origin and of less than five days duration.<sup>1</sup> Abdominal pain is one of the most common complaints in a medical emergency room and accounts up to 6–10% of Emergency room visits.<sup>2</sup> Due to varied clinical spectrum of presentation, diagnosis and management of abdominal pain is a significant challenge.

Acute abdomen can have heterogeneous clinical and temporal presentation lasting from hours to days. Thus, acute abdominal pain can range from non-specific, undifferentiated and benign etiologies like psychogenic pain to life threatening emergencies like aortic dissection.<sup>3-6</sup>

Acute appendicitis, Gastroenteritis and abdominal trauma are common causes of pain abdomen adults less than 18 years of age. Appendicitis, Intestinal obstruction, cholecystitis, diverticulitis are frequently seen offenders in mid-age population and elderly. Acute Gastritis, Cardiac and some metabolic emergencies can also present as acute abdominal pain.<sup>7-10</sup>

Ultrasound and Computed Tomography are widely used radiological modalities to augment diagnostic accuracy of history and clinical examination in the setting of abdominal pain.<sup>6</sup>

This study aimed to find clinical and epidemiological spectrum of atraumatic acute abdominal pain in OPD and emergency department of a medical college in Western Uttar Pradesh.

### Materials and Methods

A cross Sectional study was done in the Department of General Surgery, Santosh Medical College and Hospital,

Ghaziabad from January 2018 to April 2019. A total of 200 patients with pain abdomen were enrolled in the study. Patients presenting with acute abdominal pain, age of above 18 years, of both the sex and all with co-morbidities were included. Patients with perforation peritonitis, all types of malignancies, trauma and of paediatric age group (<18 years) were excluded from the study. Ethical clearance was obtained from Institutional Ethical Committee. A written and informed consent was taken from patients before enrolling them for study.

A structured questionnaire format was used to elicit detailed history (onset, duration, character of pain, radiation, intensity, periodicity, type, etc.) and examination (guarding, rigidity, rebound tenderness, distortion in abdominal anatomy, lump, scar, shape of abdomen, pigmentation). 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.

The assessment of pain was done on the basis of a detailed history and examination which included history of onset and duration.

Pain relief was given through the oral route if mild or parenterally when severe. The patients were followed up until discharge from admission in ward and the final diagnosis at discharge was noted.

### Statistical analysis

Data was entered in MS-EXCEL and the variables identified were analyzed. Descriptive statistical analysis was carried

out in the present study. Statistical testing was conducted with the statistical package for the social science system (SPSS) version 17.0. Continuous variables were presented as mean  $\pm$  SD and categorical variables were presented as absolute numbers and percentages. The comparison of normally distributed continuous variables between the groups was performed using Student's t test. Nominal categorical data between the groups were compared using Chi-squared test or Fisher's exact test as appropriate.  $P < 0.05$  was considered statistically significant.

## Results

Out of 1200 patients admitted via the emergency department at the hospital, 200 were admitted with atraumatic acute abdominal Pain. Out of 200, 120 were due to surgical causes and 80 due to non-surgical causes. Thus 10% of patients presenting to Emergency Room (ER) were admitted with surgical causes of acute abdomen.

**Table 1:** Demographic characteristics of patients presenting to emergency with acute abdominal pain

S. No.	Characteristics	Number	Percentage
1	<b>Age</b>		
	18-40	157	78.5
	41-60	30	15
	>60	13	6.5
2	<b>Gender</b>		
	Male	90	45
	Female	110	55
3	<b>Socio Economic Status</b>		
	Lower	83	41.5
	Middle	117	58.5
4	<b>Co-morbidities</b>		
	None	165	82.5
	Diabetes	9	4.5
	Hypertension	7	3.5
	Diabetes and Hypertension	17	8.5

Out of 200 patients, maximum numbers of patients were present in the young age group with a percentage as high as 78.5%, followed by 30 patients in the middle age group. Only 6.5% of patients fell in the senior age group.

Gender wise distribution was as follows: 90 (45.0%) males and 110 (55.0%) females. Thus pain abdomen was a more common presentation in females than males. 83 (41.5%) patients belonged to the lower class and 117 (58.5%) subjects belonged to the middle class. Co-morbidities found were: Diabetes Mellitus among 9 (4.5%), Hypertension among 7 (3.5%) and both Diabetes Mellitus and Hypertension among 17 (8.5%) subjects. Rest had no Co-morbidities.

## Clinical symptoms

Sudden onset of abdominal pain was the main clinical presentation of most of the patients. Onset was found to be Sudden among 181 (90.5%) subjects and Insidious among 19 (9.5%). Colicky pain was most common with a frequency of 120 (60.0%), followed by dull Aching pain seen among

55 (27.5%) patients. Next came burning among 17 (8.5%) patients, and throbbing pain among 8 (4.0%) subjects. Prevalence of abdominal pain was found to be maximum in the right hypochondrium [ $n=37$ , (37%)], followed by right lumbar [ $n=48$ , (24%)]. Next follows left lumbar [ $n=25$ , (12.5%)] followed by epigastrium and right hypochondrium together [ $n=21$ , (10.5%)]. Right iliac and hypogastric show similar prevalence of 12 cases each (6%). Lastly follows epigastric and bilateral lumbar with  $n=7$  (3.5%) and  $n=1$  (0.5%) respectively. Pain in the abdomen was referred to the right shoulder in 23 (11.5%) subjects. Referred pain has quite a low prevalence in the total number of patients enrolled in the study, anorexia with pain abdomen was found among 35 (17.5%) subjects only, therefore suggestive of a very low frequency of the same in cases of pain abdomen. Vomiting was the dominant clinical feature, found among 84 (42.0%) patients, next follows fever among 46 (23.0%) subjects. A Detailed tabulated description of clinical Symptoms follows in Table 2.

**Table 2:** Clinical symptom characteristics

S. No.	Variable	Frequency	Percentage
1	<b>Onset of pain</b>		
	Insidious	19	9.5
	Sudden	181	90.5
2	<b>Pain Character</b>		
	Burning	17	8.5
	Colicky	120	60
	Dull Aching	55	27.5
	Throbbing	8	4
3	<b>Location of Pain</b>		
	Epigastric	7	3.5
	Epigastric & Right hypochondrium	21	10.5
	Hypogastric	12	6
	Right Lumbar	48	24
	Left Lumbar	25	12.5
	B / L Lumbar	1	0.5
	Right hypochondrium	74	37
	Right Iliac fossa	12	6
4	<b>Referred Pain</b>		
	No	177	88.5
	Yes (Right Shoulder)	23	11.5
5	<b>Associated Symptoms</b>		
	Vomiting	84	42
	Fever	46	23
	Altered bowel habits	0	0
	Anorexia	35	17.5

## Clinical signs

Most of the patients enrolled in the study had no tenderness [ $n=110$ , (55%)]. Tenderness was mainly found in Right hypochondrium and epigastrium [ $n=25$ , (12.5%)]. Tenderness in right hypochondrium only also had an incidence of as high as 24 (12%). Right Iliac Fossa (RIF) tenderness was present in only 12 (6%) cases followed by right renal angle tenderness in 9 (4.5%) patients followed by hypogastric tenderness in 8 (4%) patients. Lastly follows

left renal angle tenderness in 6 (3%) patients and epigastric tenderness in 4 (2%) patients. In most of the patients, i.e. 149 (74.5%), no guarding was there. However, 35 patients (17.5%) presented with guarding in right hypochondrium. Only 8 patients (4%) each presented with guarding in right iliac fossa as well as right hypochondrium and epigastrium respectively. There was no rigidity seen at all. However, rebound tenderness was seen in 12 patients (6%) only. Blumberg's sign was positive in only 12 (6%) patients and Murphy's sign was elicitable in 39 (19.5%) patients. No clinical sign was elicited in 149 (74.5%) cases. A summary table of Clinical signs is presented in table 3.

**Table 3:** Clinical signs

S. No.	Variable	Number	Percentage
1	<b>Tenderness</b>		
	Normal	110	55
	Epigastric	4	2
	Hypogastric	8	4
	Left Renal Angle	6	3
	Right Renal Angle	9	4.5
	Right Hypochondrium	24	12
	Right Hypochondrium & Epigastric	25	12.5
	Right Iliac Fossa (RIF)	12	6
2	<b>Guarding</b>		
	No	149	74.5
	Epigastric & Right Hypochondrium	8	4
	Right Hypochondrium	35	17.5
	Right Iliac Fossa (RIF)	8	4
3	<b>Rigidity</b>		
	Rebound Tenderness	12	6
4	<b>Signs</b>		
	No	149	74.5
	Blumberg	12	6
	Murphy	39	19.5

### Etiological distribution

Out of 200 patients in our study: Acute Cholecystitis (n = 43), Renal Stones (n = 36), Acute Appendicitis (n = 21) and Intestinal Obstruction (n = 20) were most commonly seen Surgical diagnosis. 80 patients had non-Surgical Diagnosis. The 95% confidence Interval table and Distribution Bar diagram are presented in Table 4.

**Table 4:** Etiological distribution of diagnosis

S. No.	Group	N	Percentage	95% Confidence Interval
1	Acute Cholecystitis	43	35.83	27.67% - 44.67%
2	Renal Stones	36	30	22.35% - 38.6%
3	Acute Appendicitis	21	17.5	11.52% - 25.03%
4	Intestinal Obstruction	20	16.67	10.83% - 24.09%

### Discussion

In the present Study aimed to study clinical and epidemiology profile of atraumatic abdominal pain at Santosh Medical College, Ghaziabad, we found that 16.66% of total emergency room admissions are from patients with abdominal pain. Out of patient with abdominal pain 60% have surgical causes and 40% have non-surgical causes. Acute cholecystitis, renal stones, acute appendicitis and intestinal obstruction were most common etiologies in our cohort.

Most of our patients i.e. 181 patients (90.5%) reported their pain as sudden onset while the remainder described their pain onset as gradual. The incidence of sudden onset pain here is higher than study by Jegraj M, Chanana L. et al<sup>11</sup> where pain was sudden in onset in 54.9% of patients. Acute onset abdominal pain when presented should always be taken as a matter of utmost concern about a potential intra-abdominal catastrophe.

As character of pain gives a clinical hint about the ongoing etiology, colicky pain with a frequency of 120 (60.0%) in the patient cohort suggest that mostly tubular structures (Gall Bladder, Kidney) related etiologies are the leading cause of acute abdominal pain, dull aching pain was seen among 55 (27.5%) patients, burning among 17 (8.5%) patients and throbbing pain among 8 (4.0%) subjects signify other abdominal viscera to be responsible due to other etiologies which are responsible for pain abdomen. Jegaraj M, Chanana L. et al<sup>11</sup> observed that the common types of pain included dull aching (36%), colicky (18.2%), pricking (10.2%), crushing (9.8%), and throbbing (3.4%). The variation observed likely reflected different patient distribution at various clinical centers.

In present Study, Abdominal Pain found in 100% and vomiting in 42% of the patients. This study is in concordance with study by Jain et al<sup>12</sup> where the commonest symptom was abdominal pain (100%) followed by vomiting (71.4%). Jegaraj M, Chanana L. et al also found that the most common symptom was abdominal pain (76.9%) followed by vomiting (57.2%). Similar Findings were observed in a study done by Berhane et al<sup>13</sup> the commonest symptom was abdominal pain (100%) followed by vomiting (80%). Vomiting often accompanies abdominal pain both due to mechanical causes as well as pain and psychogenic stimuli.

In this study acute cholecystitis and Renal Colic were most common causes of acute abdominal pain followed by acute appendicitis, whereas in Study by Thakur et al.<sup>14</sup> acute appendicitis was more common followed by cholecystitis and renal colic respectively. This might again reflect heterogeneity in clinical profile across various centers.

### Conclusion

Atraumatic Acute Abdominal Pain contributes to about 16.6% of emergency admissions at this center and about 60% of it is due to surgical causes. Acute cholecystitis is most common cause of surgical acute abdomen at this centre. These findings validate comparative literature findings about clinical and epidemiology profile of

abdominal pain as well as help us in addressing health infrastructure and training facilities tailored to specific etiologies in our region.

### Source of funding

Self.

### Conflict of interest

None.

### References

1. Hendrickson M, Naparst TR. Abdominal surgical emergencies in the elderly. *Emerg Med Clin North Am* 2003;21(4):937-69.
2. White MJ, Councilman FL. Troubleshooting acute abdominal pain. *Emerg Med* 2002;34(1):34-42.
3. Hardy A, Butler B, Crandall BSM. The evaluation of the acute abdomen: Common problems in acute care surgery, Springer Publishing Company, New York. 2013;10(10):19-30.
4. Hastings RS, Powers RD. Abdominal pain in the ED: a 35 year retrospective. *Am J Emerg Med* 2011;29:711-6.
5. Powers RD, Guertler AT. Abdominal pain in the ED: stability and change over 20 years. *Am J Emerg Med* 1995;13:301-3.
6. Prasad H, Rodrigues G, Shenoy R. Role of ultrasonography in nontraumatic acute abdomen. *Int J Radiol* 2007;5(2):1-4.
7. McNamara R, Dean AJ. Approach to acute abdominal pain. *Emerg Med Clin North Am* 2011;29(2):159-73.
8. Martin RF, Rossi RL. Abdominal emergencies. Has Anything Changed? *Surg Clinic North Am* 1997;77(6):1227-64.
9. Pain NA. Clinical policy for the initial approach to patients presenting with a chief complaint of nontraumatic acute abdominal pain. *Ann Emerg Med* 1994;23:24-30.
10. Irvin TT. Abdominal pain: a surgical audit of 1190 emergency admissions. *Br J Surg* 1989;76(11):1121-5.
11. Jegaraj M, Kalyaniwala K, Yadav B, Abilash K, Chanana L. Clinical profile of non-traumatic acute abdominal pain presenting to an adult emergency department. *J Family Med Prim Care* 2015;4(3):422.
12. Jain PK, Liyakat A, Mishra H, Arora N. Comparative Study of Plain X ray Abdomen, Ultrasonography and CT Diagnosis of Non-Traumatic Acute Abdomen. *Int J Med App Sci* 2014;3(4):253-9.
13. Berhane Y, Girmay K, Gebresilassie A. Outcome of emergency surgical operations performed for non-traumatic acute abdomen among adults in Mekelle hospital. *Eur J Pharm Med Res* 2016;3(14):106-11/
14. Thakur JK, Kumar R. Epidemiology of acute abdominal pain: a cross-sectional study in a tertiary care hospital of Eastern India. *Int Surg J* 2019;6(2):345-8.