

Etiological Spectrum of Surgical Acute Abdomen among patients attending Emergency Department

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ABSTRACT

Background: Acute abdomen is a common health issue that ranges from trivial to life threatening condition thus requiring hospital admissions, correct diagnosis and treatment.

Aim: To determine the etiological spectrum of surgical acute pain abdomen among patients attending emergency department at government hospital-Lahore.

Study design: Cross sectional study.

Methodology: Present study enrolled both genders (n=154) through simple random sampling technique following ethical approval. All baseline investigations were done at time of enrollment. All information was collected through structured questionnaire. Radiological investigations like ultrasonography (USG) and computer tomography (CT) scan were done on appropriate indication. Data was evaluated by using SPSS v.24. Chi-square test was used to compare the symptoms, diagnosis, treatments and clinical signs between the both genders. A p-value ≤ 0.05 was considered significant.

Results: Mean age of the patients was 41.4 ± 16.5 years. There were 82(53.2%) males and 72(46.8%) females. Symptoms like abdominal pain, burning micturation, diarrhea and guarding were significantly higher in males. The proportion of localized pain was higher in female as compared to male but statistically insignificant.

Practical Implication: As there is a high incidence of acute abdomen among our population and there is lack of local data regarding exact epidemiology of this health issue. The findings of this study emphasized the etiological spectrum of acute surgical abdomen. This helped in pointing out the loop holes regarding correct diagnosis while identifying different presentations of serious illnesses.

Conclusion: It was concluded that patients present differently with acute abdomen so common diagnosis should be made and prompt examination need to be done. Timely intervention and management can therefore prevent major complications.

Keywords: Acute abdomen, Appendicitis, Perforation peritonitis and Surgical Intervention.

INTRODUCTION

Literature review has revealed that most common presenting health issue in surgical emergency department is acute abdominal pain accounting 10-20% of all emergency cases¹. It has been documented that in most patients symptoms are self-limiting while few patients develop severe "Acute abdomen". Their severity of disease may be due to underlying abdominal pathology that requires emergency intervention mostly as per previous study². Acute abdomen is defined as "a spectrum of surgical, medical and gynecological conditions ranging from trivial to life threatening conditions, which require hospital admission, investigations and treatment³.

Intensity and duration of pain of acute abdomen is variable and ranges from mild to very severe following duration from several hours to days as documented previously.⁴ It has varying clinical presentations and overlap with many illnesses thus many times misleads to incorrect diagnosis. There are thousands of causes for acute abdomen that range from benign disease, psychogenic pain to life threatening aortic dissection as documented by previous many studies^{4,5}. Acute gastroenteritis, acute appendicitis and abdominal trauma are common causes of pain abdomen in children and young adults. Intestinal obstruction, biliary diseases, diverticulitis and appendicitis are common culprits among middle aged and elderly patients. Common non surgical causes include metabolic and cardiac emergencies (e.g. acute inferior wall myocardial infarction)⁶.

Being a developing country with limited resources, according to one estimation, almost 25% patients stay undiagnosed with a nonspecific cause in rural areas in our clinical setups but however this percentage is decreasing with new advancement in medicals field by the help of latest radiological imagings^{6,7}. Ultrasound and Computed Tomography are widely used radiological modalities to augment diagnostic accuracy of history and clinical examination in the setting of abdominal pain⁸⁻⁹. The elderly patients have atypical presentations with longer duration of pain at presentation⁹.

Associated features like vomiting, guarding, tachycardia were of diagnostic value while other features were not very useful¹⁰. As there is a high incidence of acute abdomen among our population and there is lack of local data regarding exact epidemiology of this health issue. The findings of this study emphasized the etiological spectrum of acute surgical abdomen. This helped in pointing out the loop holes regarding correct diagnosis while identifying different presentations of serious illnesses. Hence, aim was to determine the etiological spectrum of surgical acute pain abdomen among patients attending emergency department at government hospital-Lahore.

METHODOLOGY

Study design was a cross sectional study that enrolled both genders having sample size of 154 through simple random sampling technique following ethical approval. All participants presented in emergency department with complain of acute abdomen. Blood samples were taken and all baseline investigations were done. All information was collected through structured questionnaire. All participants were told about the nature of study and written consent was taken. Radiological investigations like ultrasonography (USG) and computer tomography (CT) scan were done on appropriate indication. Included participants were aged 15-80 with while presenting with acute abdomen at surgical OPD/emergency. Participants with known malignancy and reluctant to participate were excluded. Informed consent was taken.

Statistical analysis: Data was evaluated by using SPSS v.24. Mean \pm SD were given for numeric data. The frequency and percent were calculated for categorical data i.e., gender, symptoms, diagnosis, treatments and clinical signs. Chi-square test was used to compare the symptoms, diagnosis, treatments and clinical signs between the both genders. A p-value ≤ 0.05 was considered significant.

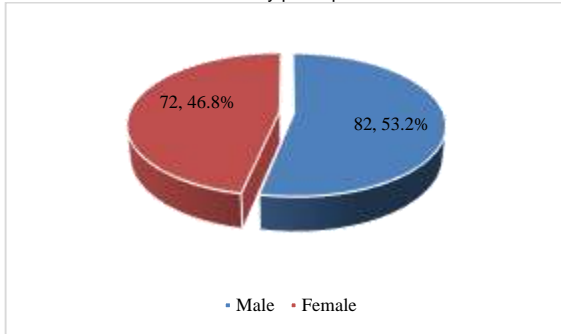
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RESULTS

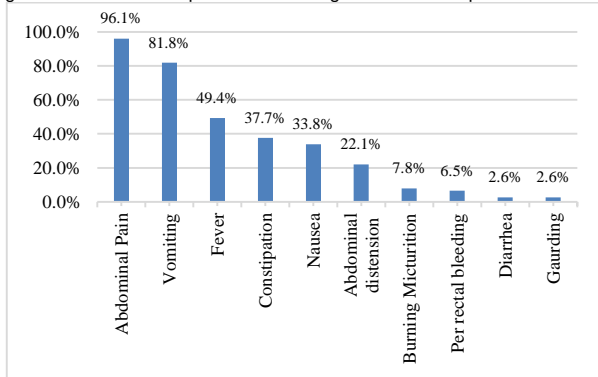
The mean age of the patients was 41.4±16.5 with age range from 15 to 80 years. There were 82(53.2%) males and 72(46.8%) females.

Figure-1: Gender distribution of study participants



Distribution of patients according to their clinical presentation is given in figure-2. Most common presenting symptom with acute abdomen was vomiting followed by fever among enrolled participants. Only few presented with abdominal guarding.

Figure-2: Distribution of patients according to their clinical presentation



According to Chi-square test, abdominal pain, burning micturition, diarrhea and guarding was significantly higher in males whereas fever and constipation was higher in females in comparison to males as shown by table-1.

Table-1: Comparison of symptoms between both gender

		Gender		Total	p-value
		Male	Female		
Abdominal Pain	n	76	72	148	0.030*
	%	92.7%	100.0%	96.1%	
Vomiting	n	66	60	126	0.648
	%	80.5%	83.3%	81.8%	
Fever	n	48	28	76	0.015*
	%	58.5%	38.9%	49.4%	
Constipation	n	40	18	58	0.002*
	%	48.8%	25.0%	37.7%	
Nausea	n	24	28	52	0.208
	%	29.3%	38.9%	33.8%	
Abdominal distension	n	18	16	34	0.968
	%	22.0%	22.2%	22.1%	
Burning Micturition	n	2	10	12	0.008*
	%	2.4%	13.9%	7.8%	
Per rectal bleeding	n	6	4	10	0.751
	%	7.3%	5.6%	6.5%	
Diarrhea	n	0	4	4	0.046*
	%	0.0%	5.6%	2.6%	
Guarding	n	0	4	4	0.046*
	%	0.0%	5.6%	2.6%	

*Statistically Significant

Table-2: Distribution of diagnosis in both genders

		Gender		Total
		Male	Female	
Acute Appendicitis	n	14	10	24
	%	17.1%	13.9%	15.6%
Acute Cholecystitis	n	20	24	44
	%	24.4%	33.3%	28.6%
Acute Pancreatitis	n	4	8	12
	%	4.9%	11.1%	7.8%
Adhesive Bowel Disease	n	16	12	28
	%	19.5%	16.7%	18.2%
Bowel Perforation	n	4	0	4
	%	4.9%	0.0%	2.6%
Carcinoma colorectal	n	4	0	4
	%	4.9%	0.0%	2.6%
Gastric Carcinoma	n	0	4	4
	%	0.0%	5.6%	2.6%
GOO	n	4	2	6
	%	4.9%	2.8%	3.9%
Gut ischemia secondary to SMA thrombosis	n	2	0	2
	%	2.4%	0.0%	1.3%
Gut ischemia secondary to SMV thrombosis	n	6	2	8
	%	7.3%	2.8%	5.2%
Ileal stone	n	0	2	2
	%	0.0%	2.8%	1.3%
Intestinal Tuberculosis	n	8	0	8
	%	9.8%	0.0%	5.2%
Intussusception	n	0	2	2
	%	0.0%	2.8%	1.3%
Meckels diverticulum	n	0	2	2
	%	0.0%	2.8%	1.3%
Obstructed umbilical hernia	n	0	2	2
	%	0.0%	2.8%	1.3%
ruptured ovarian cyst	n	0	2	2
	%	0.0%	2.8%	1.3%

Table-3: Distribution of treatments in both genders

		Gender		Total
		Male	Female	
Abdomino-perineal Resection	n	2	0	2
	%	2.4%	0.0%	1.3%
Diagstic lap	n	2	0	2
	%	2.4%	0.0%	1.3%
Diagstic lap and Feeding jejunostomy	n	0	4	4
	%	0.0%	5.6%	2.6%
Distal Gastrectomy + Bilroth-1 drainage	n	2	0	2
	%	2.4%	0.0%	1.3%
Exp Laprotomy	n	0	2	2
	%	0.0%	2.8%	1.3%
Exp Laprotomy + ileostomy	n	12	2	14
	%	14.6%	2.8%	9.1%
Exp Laprotomy + Primary Repair	n	0	2	2
	%	0.0%	2.8%	1.3%
Exp Laprotomy+ Resection Anastomosis	n	2	2	4
	%	2.4%	2.8%	2.6%
Feeding jejunostomy	n	2	0	2
	%	2.4%	0.0%	1.3%
Gastrojejunostomy	n	0	2	2
	%	0.0%	2.8%	1.3%
Lap Appendectomy	n	0	6	6
	%	0.0%	8.3%	3.9%
Open Cholecystectomy	n	8	8	16
	%	9.8%	11.1%	10.4%
Managed Conservatively	n	22	24	46
	%	26.8%	33.3%	29.9%
Open Appendectomy	n	14	4	18
	%	17.1%	5.6%	11.7%
Lap Cholecystectomy	n	12	14	26
	%	14.6%	19.4%	16.9%
pancreatic sphincterectomy + pancreatic duct stenting	n	2	0	2
	%	2.4%	0.0%	1.3%
Rt Hemicolectomy	n	2	2	4
	%	2.4%	2.8%	2.6%

Most common diagnosis with acute abdomen was acute cholecystitis (28.6%) followed by acute appendicitis (15.6%) among enrolled participants. Only few participants had gut ischemia and ileal stones as shown in table-2.

Most patients received conservative management (29%) followed by laparoscopic cholecystectomy (16%). Only few participants had Abdomino-perineal Resection and Diagnostic lap as shown in table-3.

According to Chi-square test, no difference was observed in history of both genders. Significant difference was observed in presentation time between both genders. Majority of females presented after 3 days. The proportion of localized pain was higher in female as compared to male but statistically insignificant as shown by table-4.

Table-4: Comparison of time of presentation and type of pain between both genders

Variable	Category	n	Gender		Total	P-value
			Male	Female		
Time of Presentation	On the day	n	20	6	26	0.030*
		%	24.4%	8.3%	16.9%	
	Within 3 days	n	32	34	66	
		%	39%	47.2%	42.9%	
	More than 3 days	n	30	32	62	
		%	36.6%	44.4%	40.3%	
Pain	Localized	n	45	50	95	0.064
		%	54.9%	69.4%	61.7%	
	Diffused	n	37	22	59	
		%	45.1%	30.6%	38.3%	

*Statistically Significant

DISCUSSION

Most common presenting health issue in surgical emergency department is acute abdominal pain accounting 10-20% of all emergency cases. It may be due to acute gastroenteritis or aortic dissection so proper history followed by examination becomes critical. Examination findings should get support from investigation thus leading to correct diagnosis. According to many studies, emergency surgeon plays vital role in relieving the patient's symptoms by using correct and useful management skills in-order to stabilize life-threatening conditions in a rapid and cost-effective manner.

In present study, 154 participants were enrolled that included both genders. More males (53.2%) were enrolled in current project. Similarly, in other previous study, more males (55%) were enrolled with acute abdomen in comparison to females thus our enrollment method was in line with study¹⁰.

Most common presenting symptom with acute abdomen was vomiting (81.8%) followed by fever (49.4%) among enrolled participants in present study. Only few presented with abdominal guarding and diarrhea (2.6%). Our results were similar with another study that showed vomiting (75.6%) while fever in 45.6% of their enrolled patients. Similarly only 2% participants had diarrhea in that study¹¹.

In present study, almost 61% patients presented to ER with acute abdomen within 3 days of their illness. Similarly, another study showed that 72% patients presented within 72 hours of their pain while rest presented late. Our study showed significant difference with p-value less than 0.05 between those who presented within 3days in comparison to late presentation¹².

Most common diagnosis with acute abdomen was acute cholecystitis (28.6%) followed by acute appendicitis (15.6%) among enrolled participants. Only few participants had gut ischemia and ileal stones. This finding was paradoxical to few studies that showed common condition encountered by emergency surgeon was acute appendicitis^{5,9}. In another study, acute pancreatitis was next common diagnosis after acute appendicitis whereas in present study, acute pancreatitis was less common¹².

Most patients received conservative management (29%) followed by Lap. cholecystectomy (16%) in present study. Only few participants had abdomino-perineal resection and diagnostic lap. Many previous studies documented that the only way to reduce morbidity and prevent serious complications is to perform appendectomy before perforation or gangrene occurs^{8,10}. This finding was in line with our results as patients having acute appendicitis received similar treatment as revealed by previous studies¹³⁻¹⁵.

Limitations of study: Financial constrains and limited resources with no genetic workup and long follow-ups added to limitations. It was a single centre study.

CONCLUSIONS

It was concluded that patients present differently with acute abdomen so common diagnosis should be made and prompt examination need to be done. Timely intervention and management can therefore prevent major complications. In surgery, acute abdomen is a very common health issue but need correct diagnosis.

Authors' Contribution: **AJ:** Conceptualized the study, analyzed the data, and formulated the initial draft. **IA:** Contributed to the histomorphological evaluation. **MHL:** Contributed to the analysis of data and proofread the draft.

Conflict of interest: None

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REFERENCES

- Thakur JK, Kumar R. Epidemiology of acute abdominal pain: a cross-sectional study in a tertiary care hospital of Eastern India. *International Surgery Journal*. 2019;6(2):345-8.
- 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.
- Chimkode R, Shivakumar C.R. Clinical profile of acute abdomen cases at a tertiary care hospital. *Int Surg J*. 2016;3(1):105-7.
- Jain R, Gupta V. A prospective study of epidemiology and clinical presentation of non-traumatic acute abdomen cases in a tertiary care hospital of central India. *Int Surg J*. 2017;4(1):242-245.
- Jain R, Gupta V. A prospective study of epidemiology and clinical presentation of non-traumatic acute abdomen cases in a tertiary care hospital of central India. *International Surgery Journal*. 2017;4(1):242-5.
- 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.
- Berhane Y, Girmay K, Gebresilassie A. Outcome of emergency surgical operations performed for non-traumatic acute abdomen among adults in Mekellehospital. *European J Pharm Med Res*. 2016;3(14):106-11.
- Singh G, Dogra BB, Jindal N, Rejintal S. Non-traumatic ileal perforation: a retrospective study. *J Family Med Prim Care*. 2014;3(2):132-5.
- Hagos M. Acute abdomen in adults: a two year experienced in Mekelle, Ethiopia. *Ethiop Med J*. 2015;53(1):19-24.
- Boukar YM, Mokake D, Elong FA, Enah TD, Adami MA, Savom EP, Zisuh AV, Bang GA, Mefire AC, Essomba A, Ngowe MN. Prevalence, Aetiology, and Clinical Profile of Acute Abdomen in Pregnancy in Southwest Cameroon: A 5-Year Retrospective Study. *Surgical Science*. 2023;14(1):1-9.
- Diaz JJ, Barnes S, O'Meara L, Sawyer R, May A, Cullinane D, Schroeppel T, Chipman A, Kufera J, Vesselinov R, Zielinski M. *Acute Care Surgery and Surgical Rescue: Expanding the Definition*. *Journal of the American College of Surgeons*. 2023;10-97.
- Kesarwani A, Pardeshi CZ, Das AG, Yadav P, Khairnar N. The acute abdomen: a comparative analysis of clinical, radiological and operative findings. *World J Pharmaceu. Med Res*. 2018;4(6):183-192.
- Chanana L, Jegaraj MA, Kalyaniwala K, Yadav B, Abilash K. Clinical profile of non-traumatic acute abdominal pain presenting to an adult emergency department. *J Family Med Prim Care*. 2015;4:422-427.
- Danish A. A retrospective case series study for acute abdomen in general surgery ward of Alibad Teaching Hospital. *Annals of Medicine and Surgery*. 2022;73:103199.
- Agboola JO, Olatoke SA, Rahman GA. Pattern and presentation of acute abdomen in a Nigerian teaching hospital. *Nigerian Medical Journal: Journal of the Nigeria Medical Association*. 2014;55(3):266.