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Original Research Article

Evaluation of Upper Gastrointestinal Endoscopic Findings in Proven Cases of Acute Pancreatitis in a Tertiary Care Hospital in South India

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ABSTRACT

Background
The aim of the study was to document and classify various mucosal lesions observed during upper gastrointestinal endoscopy in patients with confirmed acute pancreatitis.
Methods
We conducted a prospective study on adult patients (18 years and older) diagnosed with acute pancreatitis. Diagnosis criteria included acute onset of typical abdominal pain consistent with acute pancreatitis, and/or serum amylase and/or lipase levels exceeding two times the upper limit of normal, or characteristic findings on abdominal computed tomography (CT) scan or ultrasonography. Patients who were medically unfit or declined to undergo endoscopy, as well as those with a documented history of peptic ulcer disease confirmed by endoscopy within the past three months, were excluded from the study.
Results
In the current study, the predominant age group affected by acute pancreatitis was between 30 to 60 years. Alcohol emerged as the leading cause, contributing to 96.6% of cases within the study cohort, with abdominal pain being the most frequently reported symptom. Computed tomography (CT) scan was the universally definitive diagnostic tool for acute pancreatitis, confirming the condition in all cases (100%). Of the 60 patients who underwent upper gastrointestinal endoscopy (OGD), 55 exhibited positive findings. Gastritis was the most prevalent upper gastrointestinal abnormality, accounting for 36 cases (60%) among those with significant findings. Furthermore, the prevalence of H. pylori infection was found to be 25.4% in this study population.

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Conclusion
In acute pancreatitis, esophagitis, gastric ulcers, and duodenal ulcers are frequently observed during endoscopic examinations. However, these findings do not show a correlation with the severity of pancreatitis itself.
Key Words: Acute Pancreatitis, Ulcers, Endoscopy.

INTRODUCTION

Acute pancreatitis is a frequently encountered and complex disease that can manifest with both local and systemic complications. It is characterized by sudden pancreatic inflammation often devoid of significant fibrosis. The spectrum of severity varies widely, ranging from mild inflammation that resolves on its own to severe cases involving infected pancreatic tissue death, multiple organ failure, and a high risk of death.

Despite the absence of targeted therapies addressing the fundamental pathophysiology, clinical outcomes have shown improvement in recent decades. This progress is likely due to more consistent approaches to diagnosis, monitoring, and treatment.

In the United States, acute pancreatitis represents the most common gastrointestinal discharge diagnosis, with its incidence rising by 30% since 2000. This condition also incurs substantial healthcare costs, totaling approximately $2.6 billion annually for inpatient care.
The mortality rate of acute pancreatitis is notable, ranking it as the 14th most fatal illness overall and the ninth leading cause of non-cancer-related gastrointestinal mortality.

These insights underscore the significant clinical, economic, and public health implications of acute pancreatitis, highlighting the ongoing challenges and the importance of continued research and improved management strategies. Acute pancreatitis exhibits a wide range of incidence rates worldwide, spanning from 5 to 80 cases per 100,000 population, with Finland and the United States reporting the highest figures. There are notable variations in the racial incidence of acute pancreatitis, influenced by both the prevalence of causal factors and ethnic backgrounds. Specifically, the annual incidence rates are 4 per 100,000 population for Native Americans, 5.7 per 100,000 for whites, and 20.7 per 100,000 for blacks[1].

This condition arises from the uncontrolled activation of pancreatic enzymes, potentially leading to complications such as hypovolemia, reduced intravascular volume, and multi-organ dysfunction. Despite advancements in medical and surgical techniques, acute pancreatitis remains a significant contributor to morbidity and mortality globally, this challenging subject is taken up for the present study in which we will be studying the evaluation of upper gastrointestinal endoscopic findings in established acute pancreatitis in our hospital[2]

Acute pancreatitis is defined as a sudden inflammation of the pancreas, characterized by severe abdominal pain and elevated levels of pancreatic enzymes in the blood or urine. It is reversible with appropriate treatment. Recurrences are common, especially if underlying causes like gallstones or alcohol consumption are not addressed.

In contrast, chronic pancreatitis is a persistent inflammatory condition of the pancreas that results in irreversible structural changes. It typically causes recurrent abdominal pain and may lead to permanent loss of pancreatic function. While some patients with chronic pancreatitis experience exacerbations, the disease can also progress silently without significant pain[3].

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AIM

To enumerate various mucosal lesions in established cases of Acute Pancreatitis on upper gastrointestinal endoscopy.

OBJECTS

patients with proven Acute pancreatitis admitted in MMC&RI, Mysuru, Karnataka.

MATERIALS & METHODS

The current Prospective observational study was conducted in the Department of General Surgery, Mysore Medical College & Research Institute (MMC&RI), Mysuru, Karnataka for a period of 4 months from 1st January 2024 till 30th April 2024 on 60 patients

Inclusion criteria

Patients eligible for inclusion in our study were aged 18 years or older and diagnosed with acute pancreatitis. Diagnosis was established based on the presence of at least two of the following criteria: acute onset of typical abdominal pain suggestive of acute pancreatitis, serum amylase and/or lipase levels greater than two times the upper limit of normal, or characteristic findings indicating acute pancreatitis on abdominal computed tomography (CT) scan or ultrasonography. Participants were required to provide written informed consent.

Exclusion Criteria

Patients were excluded from the study if they were medically unfit or unwilling to undergo endoscopy. Additionally, individuals with a confirmed diagnosis of peptic ulcer disease based on endoscopy within the past 3 months were also excluded from participation.

Source of Data All patients presenting with Acute Pancreatitis who were diagnosed clinically, biochemically using Serum Amylase and Serum Lipase, and radiologically by Ultrasonography or Computed tomography (CT).

RESULTS

In the present study, the most common age group presenting with acute pancreatitis was between 30 to 60 years, accounting for 75% followed by more than 60 years age group with 16.7% (Table 1).

Age (years)	Cases	Percentage (%)
< 30	5	8.3
30-60	45	75
>60	10	16.7
Total	60	100

Table 1: Age distribution of cases

In the present study, pancreatitis was more common in males accounting for 95% of the study group (Figure 1).

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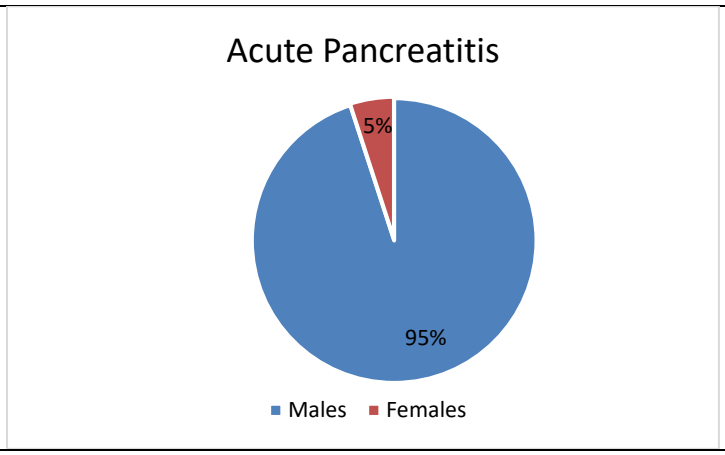

Figure 1: Sex Distribution

In present study, alcohol is the most common cause for acute pancreatitis, accounting for 90% of the study group (Figure 2).

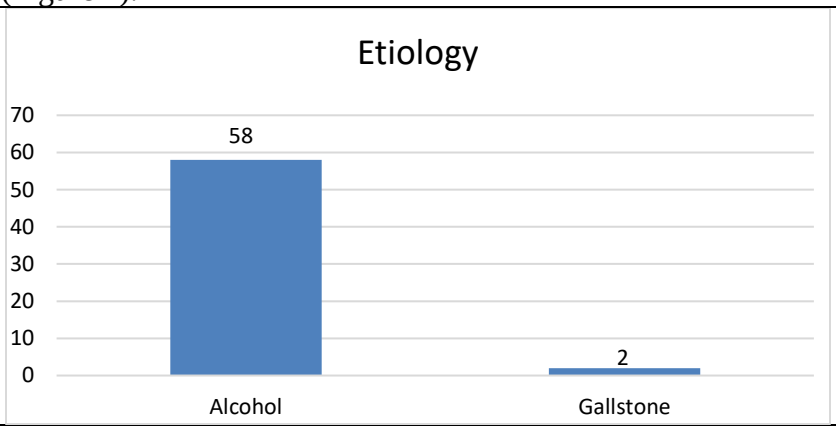

Figure 2: Etiology Distribution

In our current study, abdominal pain was the predominant dyspeptic symptom, reported in 60 cases (100%). Following this, heartburn was noted in 46 cases (76.7%), and nausea in 44 cases (73.3%). Other symptoms observed included vomiting in 32 cases (53.3%), fever in 6 cases (10%), and jaundice in 2 cases (3.3%) (Table 2).

Symptoms	**No. of Cases**	**Percentage (%)**
Pain abdomen	60	100
Heartburn	46	76.7
Nausea	44	73.3
Vomiting	32	53.3
Abdominal distention	5	8.3
Fever	6	10
Jaundice	2	3.3

Table 2: Symptoms of pancreatitis

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In our current study, abdominal CT scan was identified as the confirmatory diagnostic investigation(100%) for acute pancreatitis.

Test	No. of Patients	Supported Diagnosis N (%)
Serum lipase	ALL	53(88.3)
Serum amylase	ALL	48(80)
USG	ALL	43(71.6)
CT	ALL	60

Table 3: Diagnostic investigations

In our current study, among the 60 patients diagnosed with acute pancreatitis who underwent OGD (upper gastrointestinal endoscopy), 55 patients (91.7%) exhibited positive upper gastrointestinal findings, while 5 patients (8.3%) showed negative results on OGD. Specifically, 5 cases within the study group had normal findings on endoscopy (Figure 3).

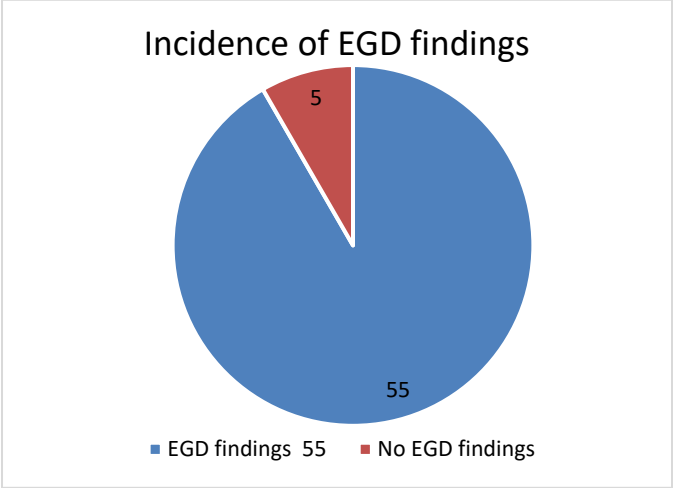

Figure 3: Incidence of EGD findings

Among patients with significant upper gastrointestinal findings on OGD (upper gastrointestinal endoscopy), gastritis was the most prevalent, observed in 36 cases (60%). Gastric ulcer was the second most common finding, identified in 20 cases (33.3%). Importantly, no complications related to OGD were encountered throughout the study period (Table 4).

	No. of Cases	Percentage (%)
Lesions		
Total	60	100
Esophageal lesions	6	10
Gastritis	36	60
Duodenitis	4	6.6
Gastric Ulcer	20	33.3
Single/Multiple	8/12	
Location		
Body	5	
Antrum	14	

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Body and antrum	8	
Duodenal ulcer	10	16.6
Single/multiple	3/7	
Location		
Bulb	8	
Second portion	1	
Bulb and second portion	1	
Pseudocyst	3	5
Normal study	5	8.3

Table 4: UGI Endoscopic Findings

In our current study, the prevalence of H. pylori infection was found to be 25.4%. An interesting observation was the distinct difference in the location of ulcers between the H. pylori-positive and negative groups. Among the 14 patients in the H. pylori-positive ulcer group, 8 patients (57.14%) had only a gastric ulcer, while 4 patients (28.5%) had only a duodenal ulcer. However, among the 41 patients in the H. pylori-negative ulcer group, gastric ulcers were identified in 12 patients (29.3%), and duodenal ulcers in 6 patients (14.6%) (Table 5).

55 EGD positive cases		**H.Pylori Positive**	**H. Pylori Negative**
Sex	Male	12	37
	Female	2	4
Total cases		14(25.4%)	41(74.5%)
Esophageal ulcer		2	4
Gastric Ulcer		8	12
Duodenal Ulcer		4	6

Table 5: Infection rate of helicobacter pylori in patients with peptic ulcer disease

DISCUSSION

In this prospective observational study, we investigated the prevalence and characteristics of upper gastrointestinal mucosal lesions in acute pancreatitis. Acute pancreatitis is an inflammatory condition of the pancreas that manifests across a spectrum from mild local symptoms to severe systemic complications. The disease arises from the uncontrolled activation of pancreatic enzymes, which can lead to complications beyond the pancreas due to persistent hypovolemia, decreased intravascular volume, and multi-organ dysfunction.

Recent studies have indicated that 65% of patients with acute pancreatitis develop acute gastrointestinal mucosal lesions[5]. In our study, we observed a similarly high incidence of mucosal lesions, consistent with previous findings. Stress ulcers are known to occur in approximately 70% to 90% of critically ill patients, highlighting their common occurrence in this context.

Our study revealed a significant association between upper gastrointestinal mucosal abnormalities and acute pancreatitis, with 91.6% of our patients exhibiting such abnormalities. This aligns with findings from previous research, which also noted that more than half of patients with acute pancreatitis experienced complications involving upper gastrointestinal mucosal lesions. It has been postulated that the decrease in intravascular volume and the physiological

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stress response, which reduces blood flow, may contribute to ischemia and inflammation[2] in the upper gastrointestinal tract in these patients. These observations underscore the complex interplay between acute pancreatitis and upper gastrointestinal mucosal health, emphasizing the need for comprehensive monitoring and management strategies in affected individuals.

The average age in our study was 48.1 years with a standard deviation of 18 years, which closely matches that found in the Elmas series[4]. The Lin series, in contrast, demonstrated the highest mean age distribution[5]. Our study encompassed participants aged between 19 and 80 years. A notable high incidence of acute pancreatitis was observed among individuals aged 30 to 60 years, comprising 75% of cases, a finding consistent with other studies.

In our current study, acute pancreatitis was predominantly observed in males, comprising 95% of the study group. This trend mirrors findings in the Chen et al. and Lee series, where males accounted for 72.6% and 71.8% of cases, respectively[6,2]. The male predominance in our study population can be attributed to a higher incidence of alcoholic pancreatitis compared to gallstone pancreatitis (96.7% vs. 3.3%), a condition more prevalent among males due to higher rates of alcohol consumption.

Recent years have seen an increase in acute pancreatitis incidence, partly attributed to rising alcohol consumption[2]. Alcoholic pancreatitis tends to affect younger males and is often milder in severity. Additionally, male patients with acute pancreatitis in our study showed a higher occurrence of peptic ulcer disease, which may be linked to factors like smoking or other unidentified causes.

In this study, the presence or location of acute gastrointestinal mucosal lesions (AGML) did not correlate with the etiologies of pancreatitis. The causes of acute pancreatitis observed were consistent with those reported in previous studies. Many studies have highlighted the importance of upper gastrointestinal endoscopy in cases where there are overlapping upper gastrointestinal symptoms. Among the mucosal lesions identified, gastritis was the most common, followed by gastric ulcers. Notably, the prevalence of peptic ulcer disease (PUD) in patients with acute pancreatitis in our study was relatively high at 50%. This contrasts sharply with the general population prevalence of PUD, which stands at about 5% based on recent data. This suggests a potential association between PUD and acute pancreatitis[6].

Chen et al.'s series was the first prospective study to examine the incidence and characteristics of acute pancreatitis-associated acute gastric mucosal lesions[6]. They found that these mucosal lesions occurred in 128 out of 197 patients (65%), which is lower than the incidence observed in our present study. In our study, various mucosal lesions such as esophagitis, gastritis, and duodenitis were considered, leading to a higher incidence of findings on upper gastrointestinal endoscopy (91.6%) compared to other studies. For instance, the Elmas series reported a positive finding rate of 70%, while the Lin series reported 69%[4,5]. Interestingly, while previous studies, including Chen et al., noted that acute gastrointestinal lesions typically manifest as superficial erosions, often diffuse and mainly located in the fundus and body of the stomach, our study found that these lesions were predominantly located in the antrum region (70%)[6]. This contrasts with findings from other studies where antral or duodenal lesions were less common.

In our study, gastritis was the most frequent finding on upper gastrointestinal endoscopy (OGD), occurring in 60% of cases (36 out of 60 patients). This incidence of gastritis is higher compared to the Lin series (16%) and Elmas series (29%). In contrast, gastric ulcer was the next most common finding in our study, identified in 33.3% of cases (20 patients). Previous studies

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such as those by Chen et al. (43.6%) and Lee (37%) reported higher incidences of gastric ulcers[6,2]. The Lin series reported a gastric ulcer incidence of 26%, while the Elmas series noted 14%[5,4] . Regarding duodenal ulcers, our study found them in 16.6% of acute pancreatitis patients, which is lower than the incidences reported in Chen et al. (30%), Lin (24%), and Lee (24%) studies[6,5,2]. The Elmas series reported a duodenal ulcer incidence of 6%, which was also lower than in our study[4].

Esophageal lesions were the least common finding in our study, present in 10% of patients, a figure consistent with the Chiun-Ku Lin and Chen et al. series[5,6]. However, the Elmas series reported a higher incidence of esophageal ulcers at 19%[4]. No complications related to OGD were encountered during our study, consistent with previous findings. Peptic ulcer disease (PUD) is known to be multifactorial, often associated with H. pylori infection. The presence of H. pylori infection in patients with PUD has been reported to range widely, from 61% to 94%[4].
In our dataset, the prevalence of H. pylori infection was found to be 25.4%, which aligns closely with findings from the Khan series (20%)[7]. The study highlighted a significant difference in the location of ulcers depending on the presence or absence of H. pylori. Among the 14 patients with H. pylori-positive ulcers, 8 had gastric lesions and 4 had duodenal ulcers. Conversely, among the 41 patients with H. pylori-negative ulcers, 12 exhibited gastric lesions, 6 had duodenal ulcers, and 5 had both gastric and duodenal ulcers. The hypothesis proposed is that pancreatitis-related inflammation may preferentially affect areas closer to the duodenum than the stomach, potentially explaining the observed variation in ulcer locations based on H. pylori status. However, the reason for the low prevalence of H. pylori infection in patients with duodenal ulcers remains unclear. This discrepancy might contribute to the lower incidence of H. pylori-related ulcers compared to findings from the Elmas series, where 21% of patients had peptic ulcer disease (PUD), including 14 gastric and 6 duodenal ulcers[4]. Notably, histological examination in the Elmas study revealed H. pylori infection rates of 64% and 55% in the pancreatitis and control groups, respectively[4]. Importantly, our study excluded patients with recent drug histories that could induce PUD, suggesting that acute pancreatitis might be a primary factor associated with PUD. This conclusion challenges the notion that H. pylori infection at 25.4% prevalence is a major contributor to ulcer pathogenesis in patients with acute pancreatitis. Instead, the mechanism of upper gastrointestinal (UGI) tract ulcers in our patients appears linked to splanchnic ischemia-induced gastric mucosal hypoperfusion during severe acute pancreatitis. Recent research also implicates systemic cytokines released from the inflamed pancreas, such as tumor necrotic factor and interleukin-6, in potentially playing a significant role in gastrointestinal pathology.

In summary, our findings suggest that while H. pylori infection prevalence is relatively low among patients with acute pancreatitis and ulcers, other mechanisms related to pancreatitis itself, including ischemia and systemic inflammation, may be more influential in the development of peptic ulcers in this specific patient group.

LIMITATIONS

1) Our study may be influenced by selection bias, which is inherent in studies involving volunteer subjects. Patients who volunteered for endoscopy might have suspected they had peptic ulcer disease (PUD) or related conditions, potentially biasing our findings.

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2) We enrolled a relatively small number of patients, which could limit the generalizability of our results and our ability to detect significant associations.
3) Critically ill patients who did not undergo endoscopy were excluded from our study. This exclusion may have underestimated the true prevalence of PUD, particularly among those with severe acute pancreatitis who are at higher risk of developing ulcers.
4) Endoscopies were performed within the first 1 to 5 days after admission, just before patients were allowed to resume oral intake. Performing endoscopies at different stages of the disease might yield different findings, as mucosal lesions and ulcerations can evolve over time.
These limitations should be considered when interpreting the results of our study. Addressing these issues in future research could strengthen the reliability and applicability of findings related to peptic ulcer disease in patients with acute pancreatitis.

CONCLUSION

Common endoscopic findings such as esophagitis, gastric ulcers, and duodenal ulcers are frequently observed in acute pancreatitis. However, these findings do not show a correlation with the severity of pancreatitis itself.

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