

Original Research Article

A study on evaluation of upper gastrointestinal endoscopic findings in established acute pancreatitis patients in tertiary care hospital

G. V. Prakash¹, A. Satish², M. Vijay Kumar^{1*}, S. Nagamuneiah¹,
G. Rajaram³, P. Sabitha¹, S. A. Shariff¹

¹Department of General Surgery, ²Department of General Medicine, ³Department of Microbiology, Sri Venkateswara Medical College, Tirupati, Andhra Pradesh, India

Received: 10 May 2019

Revised: 22 May 2019

Accepted: 28 May 2019

*Correspondence:

Dr. M. Vijay Kumar,

E-mail: vijaykumarmatapathi@yahoo.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: The objective of the study was to enumerate the different mucosal lesions in established acute pancreatitis on upper gastrointestinal endoscopy.

Methods: We prospectively conducted a study on patients with acute pancreatitis above the age of 18 year having acute onset of typical abdominal pain consistent with acute pancreatitis, or Serum amylase and/ or lipase level >2 times the upper limit of normal or characteristic findings of acute pancreatitis on an abdominal computed tomography (CT) scan or on ultrasonography. Patients who are unfit or not willing for endoscopy or had endoscopy –proved peptic ulcer disease in the recent 3 months were excluded.

Results: In the present study, the most common age group presenting with acute pancreatitis was between 30 to 60 years. In present study, alcohol is the more common cause for acute pancreatitis, accounting for 90% of the study group and pain abdomen is the most common symptom. In the present study, CT scan is most (100%) confirmatory diagnostic investigation of acute pancreatitis. In the present study, out of 80 patients with acute pancreatitis who were subjected to OGD, 72 patients had positive upper gastrointestinal finding. In patients having significant OGD findings, gastritis (42 cases, 52.5%) accounted for the most common finding. In the present study the prevalence of H. pylori infection is only 26.3%. Enlarged pancreas is the only CT finding in most cases.

Conclusions: Esophagitis and gastric and duodenal ulcers are common endoscopic findings in acute pancreatitis. They are not correlated with the severity of pancreatitis.

Keywords: Acute pancreatitis, Severity, Ulcers, CT scan

INTRODUCTION

Acute pancreatitis is a common and challenging disease that can develop both local and systemic complications. Its hallmark is acute pancreatic inflammation associated with little or no fibrosis. It ranges from a mild self-limiting inflammation of the pancreas to critical disease characterized by infected pancreatic necrosis, multiple organ failure and a high risk of mortality. The clinical outcome has improved over recent decades, even in the absence of specific treatments that target outcome-

determining pathophysiology, probably because of a more consistent approach to diagnosis, monitoring and management. Acute pancreatitis is the most common gastrointestinal discharge diagnosis in the United States (274,119 patients in 2009), an incidence which has increased 30% since 2000, and is associated with the highest aggregate inpatient costs at 2.6 billion dollars per year. The crude mortality rate of 1.0/100,000 ranks it as the 14th most fatal illness overall and the ninth most common non-cancer gastrointestinal death. Worldwide the incidence of acute pancreatitis ranges from 5 to

80/100,000 population with the highest incidence recorded in Finland and United States. The racial incidence of acute pancreatitis also shows significant variation related to the prevalence of etiological factors and ethnicity. The annual incidence of acute pancreatitis in Native Americans is 4 per 100,000 population; in whites it is 5.7 per 100,000 population; and in blacks it is 20.7 per 100,000 population.¹

However the frequency of different forms of pancreatitis varies from source to source and depends on country of origin and the population studied. Acute pancreatitis resulting from unregulated activation of pancreatic enzymes which can lead to extra pancreatic complications due to persistence of hypovolaemia, a decreased intravascular volume and multi organ dysfunction, 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 In spite of technical advances in medical and surgical fields acute pancreatitis remains a major cause of morbidity and mortality.

Acute pancreatitis is defined as an acute condition, presenting with abdominal pain and usually associated with raised pancreatic enzymes in blood or urine due to inflammatory disease of the pancreas. It may recur. By definition, acute pancreatitis is reversible. It is distinguished from chronic pancreatitis, defines as a continuing inflammatory disease of the pancreas characterised by irreversible morphological change and typically causing pain and/or permanent loss of function. Many patients with chronic pancreatitis may have exacerbations, but the condition may be completely painless.³

Aim

To enumerate the different mucosal lesions in established Acute Pancreatitis on upper gastrointestinal endoscopy.

METHODS

Study design

Prospective observational study.

Study objects

Patients with established acute pancreatitis admitted in SVRRGGH, Tirupati.

Inclusion criteria

Inclusion criteria were patients with acute pancreatitis above the age of 18 years; the diagnosis of acute pancreatitis was based on the presence of two of the following three features: acute onset of typical abdominal pain consistent with acute pancreatitis, serum amylase and/ or lipase level >2 times the upper limit of normal,

characteristic findings of acute pancreatitis on an abdominal computed tomography (CT) scan or on ultrasonography; patient giving written informed consent.

Exclusion criteria

Exclusion criteria were patients who is unfit or not willing for endoscopy; had endoscopy –proved peptic ulcer disease in the recent 3 months.

Study setting

The study will be conducted in the department of General Surgery SVRR Government General Hospital, Tirupati.

Study period

The study will be conducted 12 months from the time of approval of Institutional Ethical Committee (20th August 2017 to 20th August 2018).

Sample size

12 months from the approval of institutional ethical committee whichever is more. Minimum 50 patients of sample size.

Data collected using

- Clinical examinations
- Biochemical investigations -serum lipase, serum amylase.
- Radiological investigation - USG and CT abdomen.
- Upper gastrointestinal endoscopy after taking consent from the patients.

Data analysed using SPSS software version 16.

RESULTS

In the present study, the most common age group presenting with acute pancreatitis was between 30 to 60 years, accounting for 81.2% followed by less than 30 years age group with 15%.

Table 1: Age distribution of cases.

Age (in years)	Cases	Percentage (%)
<30	12	15
30-60	65	81.2
>60	3	3.8
Total	80	100

In the present study, pancreatitis was more common in males accounting for 92.5% of the study group (Figure 1).

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

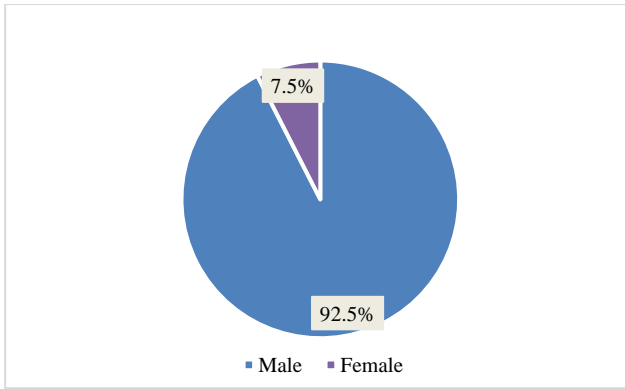


Figure 1: Sex distribution.

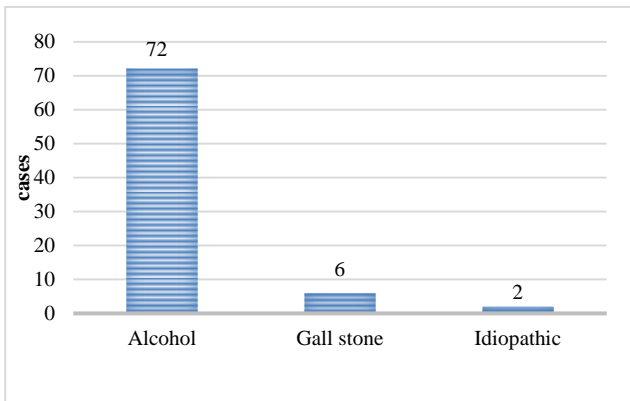


Figure 2: Etiology distribution.

Table 2: Symptoms of pancreatitis.

Symptoms	No. of cases	Percentage (%)
Pain abdomen	80	100
Nausea	52	63.4
Heart burn	46	57.5
Vomiting	30	37.5
Abdominal distension	6	7.5
Fever	6	7.5
Jaundice	2	2.5

In the present study, pain abdomen was the most common dyspeptic symptom accounting for 80 cases (100%), followed by nausea accounting for 52 cases (63.4%) and heart burn which accounted for 46 cases (57.5%). Other symptoms include vomiting (30 cases, 37.5%), fever (6 cases, 7.5%), jaundice (2 cases, 2.5%).

In the present study, pain abdomen was the most common dyspeptic symptom accounting for 80 cases (100%), followed by nausea accounting for 52 cases (63.4%) and heart burn which accounted for 46 cases (57.5%). Other symptoms include vomiting (30 cases, 37.5%), fever (6 cases, 7.5%), jaundice (2 cases, 2.5%). In the present study, pain abdomen + Nausea (63.4%) was the most common symptom complex followed by pain abdomen + heartburn (46%).

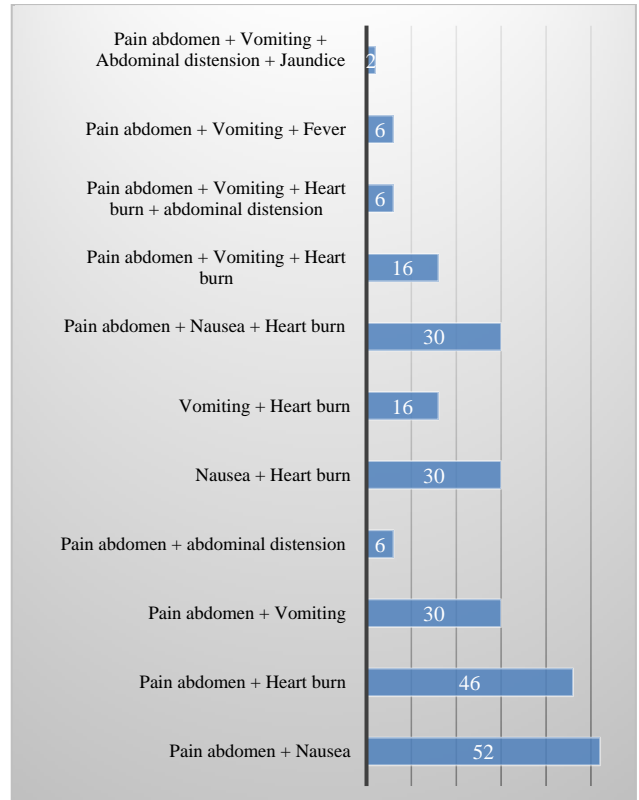


Figure 3: Symptom complex.

Table 3: Diagnostic investigations.

Test	Done in	Supported diagnosis N (%)
Serum lipase	All	71 (88.7)
Serum amylase	All	64 (80)
Both	All	73 (91.2)
USG	All	72 (90)
CT	All	80 (100)

In the present study, CT scan is most (100%) confirmatory diagnostic investigation of acute pancreatitis.

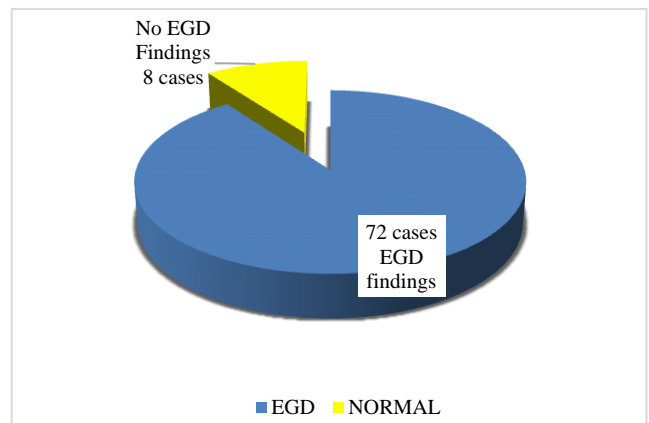


Figure 4: Incidence of OGD findings.

In the present study, out of 80 patients with Acute Pancreatitis who were subjected to OGD, 72 patients (90%) had positive upper gastrointestinal findings and 8 patients (10%) had negative OGD. In the present series, 8 cases (10%) of the study group had normal study on endoscopy.

Table 4: OGD findings.

	No. of cases	Percentage (%)
Lesions		
Total	80	100
Esophageal lesions	10	12.5
Gastritis	42	52.5
Duodenitis	6	7.5
Gu	32	40
Single/multiple	8/24	
Size >1 cm	2	
Location		
Body	5	
Antrum	20	
Body and antrum	7	
Du	12	15
Single/multiple	2/10	
Location		
Bulb	10	
Second portion	1	
Bulb and second portion	1	
Pseudo cyst	3	3.75
Normal study	8	10

In patients having significant OGD findings, gastritis (42 cases, 52.5%) accounted for the most common finding, followed by gastric ulcer (32 cases, 40%). No OGD related complications were encountered during the study.

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

72 OGD positive cases	<i>H. pylori</i> positive	<i>H. pylori</i> negative
Age	46	48
Sex	Male	49
	Female	4
Total cases	19 (26.3%)	53 (73.6%)
Esophageal ulcer	2	8
Gastric ulcer	19	42
Duodenal ulcer	4	14

In the present study the prevalence of *H. pylori* infection is only 26.3%. The distinct difference in location of ulcers between *H. pylori*-positive and negative groups was interesting. Among the 19 patients in the *H. pylori* positive ulcer group, 19 (100%) patients revealed only a gastric ulcer, and 4 (21%) patients revealed only a duodenal ulcer. However, for the 53 patients in the *H.*

pylori-negative ulcer group, gastric ulcers were found in 42 patients (70%), duodenal ulcers in 14 patients (26%).

Table 6: CT scan findings in acute pancreatitis.

	Points	Cases
Pancreatic inflammation		
Norma pancreas	0	0
Enlargement of pancreas	1	59 (73.7%)
Peripancreatic inflammation	2	23 (28.7%)
Single fluid collection	3	3 (3.8%)
>1 acute peripancreatic fluid collections	4	0
Pancreatic necrosis		
None	0	0
<30%	2	2 (2.5%)
30-50%	4	0
>50%	6	0

CT severity index= CT grade + necrosis score. Pancreatic necrosis associated with intrinsic pancreatic alterations with peripancreatic fat inflammatory changes and focal enlargement of pancreas seen in 2 cases (score 5). Pseudo cyst associated with focal enlargement of pancreas seen in 3 cases (score 4). Grade 6-10 cases not seen in our study.

DISCUSSION

In this prospective observational study, we evaluated the prevalence of upper gastrointestinal mucosal lesions and their characteristics in acute pancreatitis. Acute pancreatitis is an inflammatory disease of pancreas leads to a clinical spectrum ranging from mild local manifestations to severe systemic complications. Acute pancreatitis resulting from unregulated activation of pancreatic enzymes which can lead to extra pancreatic complications due to persistence of hypovolaemia, a decreased intravascular volume and multi organ dysfunction. In recent studies, 65% patients with acute pancreatitis were found to have acute gastrointestinal mucosal lesions.⁵ In our study the incidence of mucosal lesions is high and close to previous studies. Stress ulcers occur in approximately 70% to 90% of critically ill patients. We found a significant association between upper gastrointestinal mucosal abnormalities and acute pancreatitis, with 90% of patients having these abnormalities. Previous studies have also shown that more than half of the patients with Acute Pancreatitis were complicated with upper gastrointestinal mucosal lesions. It was hypothesized that the decrease in intravascular volume and the stress response that diminishes the blood flow could result in upper gastrointestinal ischemia and inflammation.²

Mean age in the present study was 48.1±18 years, which is similar to Elmas series.⁴ It is nearer to the other series. Lin series showing highest mean age distribution.⁵ In our study age ranges from 19 years to 80 years. High

incidence of acute pancreatitis was noted in age group between 30-60 years age which constitutes 81.2% and is similar to the other series.

In the present study, acute pancreatitis was more common in male, constituting 92.5% of the study group. Similar findings were noted in Chen et al series and Lee series (72.6% and 71.8% respectively).^{6,2} There was a male predominance in our study population, because alcoholic pancreatitis was more common than gallstone pancreatitis (90% vs.7.5%) and alcoholism appears to be more prevalent among male. There is an increase in incidence of acute pancreatitis in recent years, with recent data suggesting this increase may be attributable to increase in alcohol consumption.² Patients with alcoholic pancreatitis are generally men, belong to younger age group and are considered to have a milder form of disease. The occurrence of peptic ulcer disease was significantly increased in male patients of acute pancreatitis. In our study male patients with Acute Pancreatitis are more prone to AGML probably due to smoking or unidentified factors.

The etiologies of pancreatitis did not correlate with the presence or location of AGML. The causes of acute pancreatitis in this study were approximately the same with previous studies. Many studies have emphasized the role of upper gastrointestinal endoscopy in the presence of overlapping upper gastrointestinal symptoms. Most common mucosal lesion was gastritis followed by gastric ulcer in the present study. The current study shows that the prevalence of PUD in patients with acute pancreatitis was relatively high (55%). Because the prevalence of PUD in the general population is known to be about 5% according to recent data, the 55% prevalence of our data was high, and so PUD seems to be associated with acute pancreatitis.⁶

Chen et al series is the first prospective study evaluated the incidence and characteristics of acute pancreatitis associated acute gastric mucosal lesions.⁶ This study reported that acute gastrointestinal mucosal lesions occurred in 128 patients of the 197 patients (65%), which was less in incidence than the present study. These studies showing ulcerative lesions like esophageal ulcers, gastric ulcer and duodenal ulcers are the only mucosal lesions on endoscopy. Various lesions like esophagitis, gastritis and duodenitis also considered in the present study, which leads to increase in incidence of OGD findings (90%) than other studies. In Elmas series, the incidence of positive OGD findings was 70%, in Lin series 69%.^{4,5} Other studies have also shown that more than half of the patients with acute pancreatitis were complicated with upper gastrointestinal mucosal lesions. Previous studies Chen et al showed that acute gastrointestinal lesion usually occur as superficial erosions, which usually are diffuse and mostly located at the fundus and body area of stomach rare in antrum or duodenum. In contrast to other studies, in our study the lesions are mostly located in antrum region (70%).⁶

In this study gastritis (42 cases, 52.5%) was the most common finding in OGD, which was less in incidence in Lin and Elmas series (16% and 29% respectively).^{5,4} Gastric ulcer (32 cases, 40%) was the next common finding in our study, whereas gastric ulcer was the most common finding in previous studies. Chen et al and Lee studies showed incidence of gastric ulcer 43.6% and 37% respectively.^{6,2} In Lin and Elmas series the incidence of gastric ulcer was 26% and 14% respectively.^{5,4} In our study only 15% of acute pancreatitis patients shown duodenal ulcer, which was less in incidence than Chen et al series (30%) and Lin and Kang-Moon Lee (both shown 24% incidence).^{6,5,2} Elmas series observed incidence of duodenal ulcer in 6%, which was less than our study.⁴ In our study oesophageal lesions were the least common finding, (12.5%), which is similar to Chiun-Ku Lin series and nearly similar to Chen et al series (10%).^{5,6} In Elmas series 19% patients shown oesophageal ulcers which was higher than present study.⁴ No OGD related complications were encountered during the study like other previous studies. PUD disease is a multifactorial disease that has been largely attributed to the presence of *H. pylori* infection, and the presence of *H. pylori* infection in patients with PUD has been reported to range between 61% and 94%.⁴

However, in our data the prevalence of *H. pylori* infection is only 26.3%, which was similar to Khan series (20%).⁸ The distinct difference in location of ulcers between *H. pylori*-positive and negative groups was interesting. Among the 19 patients in the *H. pylori* positive ulcer group, 19 patients revealed gastric lesions, and 4 patients revealed only duodenal ulcer. However, for the 53 patients in the *H. pylori*-negative ulcer group, gastric lesions were found in 42 patients, duodenal ulcers in 9 patients and both gastric and duodenal ulcers in 5 patients. The suggested hypothesis is that inflammation of the pancreas affects sites nearer to the duodenum than the stomach. The location of the ulcers was different according to the status of *H. pylori*. Why a low prevalence of *H. pylori* infection is revealed in patients with a duodenal ulcer was unclear. This may be the cause for low incidence of *H. pylori* than Elmas series, which reported 20 of 94 (21%) patients were found to have PUD, 14 gastric and 6 duodenal ulcers.⁴ By histological examination, the prevalence of *H. pylori* infection was found as 64% and 55% in the pancreatitis and control groups, respectively in Elmas study.⁴ Because our study excluded patients with a recent drug history that could cause PUD, our study at least demonstrated that the main cause of PUD might be associated with acute pancreatitis. This result inferred that 26.3% *H. pylori* infection is not the major factor in the pathogenesis of ulcers in the patient with acute pancreatitis. The mechanism of UGI tract ulcers in our patients may be due to splanchnic ischemia induced gastric mucosal hypoperfusion in severe acute pancreatitis. Recent studies also found that some systemic cytokine released from inflammatory pancreas (such as tumour necrotic factor, interleukin-6, etc.), may also play an important role in gastrointestinal

mucosal ischemia, but the detailed mechanism is still unknown.⁵ It is well established that the abdominal CT can be used as a prognostic indicator for the severity of acute pancreatitis.⁷ In acute pancreatitis, most complications occur in patients with severe pancreatitis (Balthazar's grades D and E in CT scan). In our study there is no relation of GI tract mucosal lesions with severity of pancreatitis. In the present study, out of 80 patients with acute pancreatitis who were subjected to OGD, 3 patients (3.8%) had pseudo cyst, which was similar to Maringhini where 5.2% acute pancreatitis cases shows pseudo cyst formation.⁹ Chen, et al says, early endoscopy can help to initiate enteral feeding earlier for patients with acute pancreatitis.⁶ In this prospective study, they found that early endoscopy and acid-suppressive therapy can promote early initiation of enteral nutrition in patients with acute pancreatitis and also decrease the need for opiates.⁶

Limitations

There are few limitations to our study. 1. There is the possibility of selection bias, a problem that is common to all studies that involve volunteer subjects. Subjects who volunteer for endoscopy may have reasons to suspect that they have concomitant peptic ulcer disease. 2. The small number of patients ultimately enrolled. 3. The exclusion of critically ill patients who did not undergo endoscopy, which affected the exact prevalence of PUD, but this would cause underestimation of the prevalence of PUD because some of these patients had a possibility of having PUD combined with severe acute pancreatitis. 4. The endoscopies were performed on day 1 to 5 after admission. We performed on the day before allowing to take orals. Endoscopies performed on different days of disease course may have different findings. Mucosal lesions may develop over the days later.

CONCLUSION

Esophagitis and gastric and duodenal ulcers are common endoscopic findings in acute pancreatitis. They are not correlated with the severity of pancreatitis.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Charles Brunicaudi F. Schwartz's Principles of Surgery. 10th edition. 2015: 1351.
2. Lee KM, Paik CN, Chung WC, Yang JM. Association between acute pancreatitis and peptic ulcer disease. *World J Gastroenterol.* 2011;17(8):1058-62.
3. Bailey and Love's short practice of surgery. 20th edition. 1989.
4. Kasap E, Zeybel M, Tuncel ET, Serter S, Ayhan S, Yuceyar H. Prevalence and characterization of acute biliary pancreatitis-associated upper gastrointestinal mucosal lesions. *Endoscopy Gastrointestinal.* 2012;20(2):44-7.
5. Lin CK, Wang ZS, Lai KH, Lo GH, Hsu PI. Gastrointestinal mucosal lesions in patients with acute pancreatitis. *Chin Med J (Taipei).* 2002;65:275-8.
6. Chen TA, Lo GH, Lin CK, Lai KH, Wong HY, Yu HC, et al. Acute pancreatitis-associated acute gastrointestinal mucosal lesions: incidence, characteristics, and clinical significance. *J Clin Gastroenterol.* 2007;41:630-44.
7. Balthazar EJ. Staging of acute pancreatitis. *Radiol Clin N Am.* 2002;40:6,1099-209.
8. Khan J, Pelli H, Lappalainen-Lehto R. *Helicobacter pylori* in alcohol induced acute pancreatitis. *Scand J Surg.* 2009;98:221-4.
9. Maringhini. Pseudocysts in Acute Nonalcoholic Pancreatitis, Incidence and Natural History. *Digestive Dis Sci.* 1999;8(44):1669-73.

Cite this article as: Prakash GV, Satish A, Kumar MV, Nagamuneiah S, Rajaram G, Sabitha P, et al. A study on evaluation of upper gastrointestinal endoscopic findings in established acute pancreatitis patients in tertiary care hospital. *Int Surg J* 2019;6:2336-41.