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ORIGINAL ARTICLE

CLINICAL STUDY ON ACUTE PANCREATITIS

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ABSTRACT: INTRODUCTION: Early diagnosis and severity evaluation on patients with acute pancreatitis are very important due to its potential morbidity and mortality. Given the wide spectrum of disease seen, the care of patients with pancreatitis must be highly individualized. Several clinical, laboratory and radiologic factors and many scoring systems have been proposed for outcome prediction. **AIMS AND OBJECTIVES:** To study the symptomatology, clinical presentation and management in pancreatitis. To study the severity of acute pancreatitis according to Glasgow Scale. **METHODS:** Present study includes consecutive 38 patients hospitalized in CSI Holdsworth Memorial Hospital over the period of 2 years. All patients were thoroughly investigated and were stratified according to the Glasgow criteria. Data was collected on complications, investigations and interventions undertaken, outcome, duration of stay in hospital and ICU. **STATISTICAL ANALYSIS USED:** Descriptive, Chi square tests, Crosstabs (Contingency coefficient analysis). **RESULTS:** Mean age of presentation in our study was 43.1 years. There was a male predominance accounting for 68.4% compared to 31.6% females. Alcohol was the main etiological factor in about 50% of the patients. Sensitivity to S. amylase was about 100%. Accuracy of USG abdomen in diagnosing pancreatitis was about 88.5%. Ascitis was the commonest complication seen in 13.2%. Mean duration of hospital stay was 6.2 days. The patient were stratified according to Glasgow scoring system into mild (0-3) and severe (>3) pancreatitis. In our study 32 people were graded with mild pancreatitis, all improved and in 6 people who were graded with severe pancreatitis, 83.3 % improved and 2.6% expired because of complications. Test statistics showed Contingency coefficient 0.355 and P 0.019 (NS). **CONCLUSION:** Glasgow scoring system remains a valid predicting system for the outcome in patients with acute pancreatitis. It is simple easy to apply with good predictive value and can be used in all hospital settings.

KEYWORDS: Pancreatitis, Glasgow scoring, Cholelithiasis, Necrotizing, Alcoholic.

INTRODUCTION: Pancreatitis is inflammation of the glandular parenchyma of the pancreas. Acute pancreatitis is defined as an acute condition presenting with abdominal pain and is usually associated with raised pancreatic enzyme levels in the blood or urine as a result of pancreatic inflammation.[1]

Acute pancreatitis may be categorized as Mild or Severe. Mild pancreatitis is characterized by interstitial edema of the gland and minimal organ dysfunction. 80% of patients have mild attack of pancreatitis. Severe acute pancreatitis is characterized by pancreatic necrosis, a severe systemic inflammatory response and often multi organ failure.[1]

The estimated incidence is about 3% of cases presenting with pain abdomen in the UK. The hospital admission rate for acute pancreatitis is 9.8/10000 per year in UK and annual incidence may range from 5-50/100000worldwide.[1]

Given the wide spectrum of disease seen, the care of patients with pancreatitis must be highly individualized. Patients with mild acute pancreatitis generally can be managed with resuscitation and supportive care.

DOI: 10.14260/jemds/2015/1463

Etiologic factors are sought and treated, if possible, but operative therapy essentially has no role in the care of these patients. Those with severe and necrotizing pancreatitis require intensive therapy, which may include wide operative debridement of the infected pancreas or surgical management of local complications of the disease. Whereas early aggressive debridement was used commonly for all patients with pancreatic necrosis in the past, now most pancreatic surgeons have adopted a more conservative algorithm of selective and delayed pancreatic debridement.[2]

Despite the considerable amount of research underway relating to this disease, its patho physiologic mechanisms remain incompletely understood. This has led to the development of several models of experimental pancreatitis with which its etiology, patho physiology and treatment regimens are being explored.[3]

In this clinical study on acute pancreatitis, a sincere attempt is made to study different etiological factors, symptomatology and clinical presentation. This study will also discuss the severity and grading of pancreatitis, the outcome of the patient and the sequelae of pancreatitis.

MATERIALS AND METHODS: SOURCE OF DATA: The present study includes consecutive 40 patients hospitalized after May 2010 in Holds worth Memorial Hospital who were diagnosed to have pancreatitis. In that 38 were diagnosed to have acute pancreatitis and remaining 2 were chronic pancreatitis patients. Therefore 38 patients were available for analysis.

Holds worth Memorial Hospital is a secondary care hospital as provision for complete evaluation of the patient.

Inclusion Criteria: All patients admitted in surgical wards in CSI Hold sworth Memorial Hospital, Mysore and diagnosed as acute pancreatitis.

Age more than 12 years.

Exclusion Criteria: Age less than 12 years.

Patients with chronic pancreatitis and acute on chronic pancreatitis.

METHODS OF COLLECTION OF DATA: Patients with clinical diagnosis of acute pancreatitis were admitted and thoroughly investigated. On admission history was collected and thorough physical examination was done. Data collection on admission included age, sex, socio economic status and clinical presentation with respect to pain, vomiting, jaundice and distension of abdomen. History of etiology with respect to alcohol, gallstones, trauma and drugs were noted. History of previous episodes and co-morbidities were noted.

During the first 48 hours, patients were stratified according to the Glasgow criteria. Patients selected for study underwent investigations like Hb, TC, serum amylase, serum lipase, RBS, LDH, S. cal, B. urea, LFT, ABG, USG abdomen and CT-scan in selected patients. Data was collected on complications, investigations and interventions undertaken, outcome, duration of stay in hospital and ICU.

Patients with mild disease were followed up on OPD basis at 2 weeks and 4 weeks after discharge. Severe cases were followed up as per the merit of the case. Patients with biliary pancreatitis were offered cholecystectomy and patients with alcoholic pancreatitis were urged to stop consuming alcohol and de addiction was attempted with the help of psychiatrist in few cases.

DOI: 10.14260/jemds/2015/1463

ETHICS AND PERMISSION: Ethical clearance and permission was obtained from the research department of the institution. The procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (Institutional or regional) and with the Helsinki Declaration of 1975 that was revised in 2000.

STATISTICAL METHODS APPLIED:

Descriptives: The descriptive procedure displays univariate summary statistics for several variables in a single table and calculates standardized values (z scores). Variables can be ordered by the size of their means (In ascending or descending order), alphabetically, or by the order in which you select the variables (The default).

Chi-Square Test: The Chi-Square Test procedure tabulates a variable into categories and computes a chi-square statistic. This goodness-of-fit test compares the observed and expected frequencies in each category to test either that all categories contain the same proportion of values or that each category contains a user-specified proportion of values.

Crosstabs (Contingency Coefficient Analysis): The Crosstabs procedure forms two-way and multi-way tables and provides a variety of tests and measures of association for two-way tables. The structure of the table and whether categories are ordered determine what test or measure to use.

All the statistical calculations were done through SPSS for windows (Version 16.0).

OBSERVATIONS AND DATA ANALYSIS: This prospective study was done in CSI Holdsworth Memorial Hospital, Mysore over a period of two years from May 2010 to May 2012.

First 38 patients with the clinical diagnosis of acute pancreatitis were selected and studied.

The following observations were made from the study and study results were analysed using appropriate statistical analysis. The clinical data pertaining to the cases in respect of detailed history, symptomatology, signs, investigations and radiological assessment were performed and recorded in the tables respectively.

Sex	Frequency	Percentage
Male	26	68.4
Female	12	31.6
Total	**38**	**100**
Test statistics	**X^2=5.158, p value= 0.023**	

Table 1: Age and Sex distribution

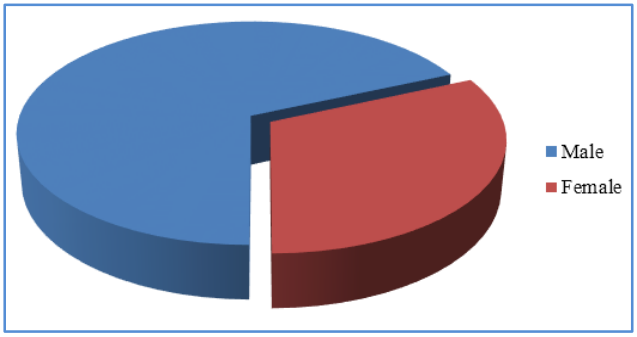

Figure 1

DOI: 10.14260/jemds/2015/1463

Age Groups		Sex		Total
		Male	Female	
16-30	Frequency	4	6	10
	Percent	15.4%	50.0%	26.3%
31-45	Frequency	10	1	11
	Percent	38.5%	8.3%	28.9%
46-60	Frequency	9	3	12
	Percent	34.6%	25%	31.6%
60+	Frequency	3	2	5
	Percent	11.5%	16.7%	13.2%
Total	Frequency	26	12	38
	Percent	100%	100%	100%
Test statistics	**Contingency coefficient=.388; P=.081 (NS)**			

Table 2: Sex distribution according to age

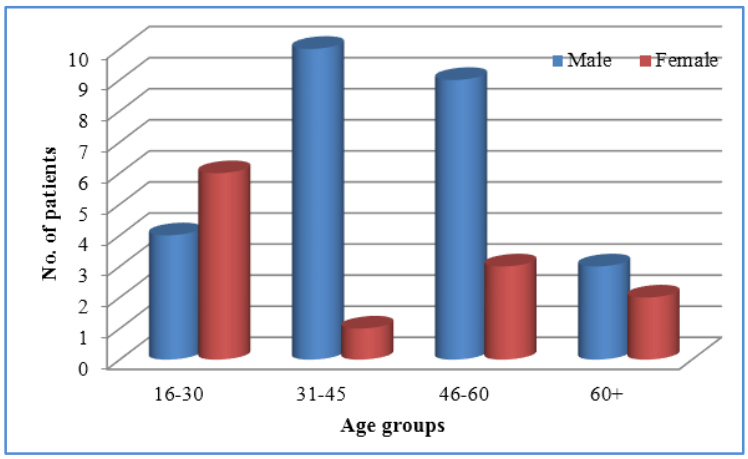

Figure 2

The above table shows analysis of age and sex distribution. In our study, the youngest was 16 years old and the eldest was 95 years old.

The highest incidence was noted in the age group of 45-60 years, accounting for 31.6% of the patients. The mean age of presentation was 43.1years±8.8 years.

In our study, male preponderance was seen with 68.4% being Males and 31.6% were Female.

Symptoms	No. of patients	Percentage	X^2	P value
Abdomen pain	38	100	-	-
Radiation	26	68.4	5.158	0.023
Vomiting	32	84.2	17.789	0.000
Distension	3	7.9	26.947	0.000
Fever	5	13.2	20.632	0.000
Jaundice	1	2.6	34.105	0.000

Table 3: Analysis of symptoms

DOI: 10.14260/jemds/2015/1463

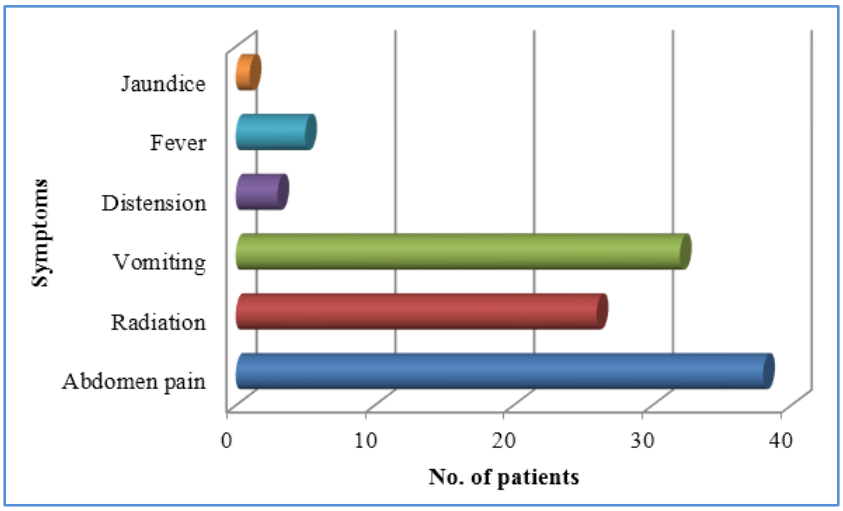

Figure 3

In our study all the patients presented with pain abdomen (100%), 84% with nausea/vomiting, 68% presented with radiation of pain to back, 7.9% with abdominal distension, 13.2% with fever and 2.6% with jaundice.

Signs	No. of Patients	Percentage	X^2	P value
Abdomen tenderness	38	100	-	-
Guarding	11	28.9	6.737	0.009
Distension	8	21.1	12.737	0.000
Ascites	3	7.9	26.947	0.000

Table 4: Analysis of signs

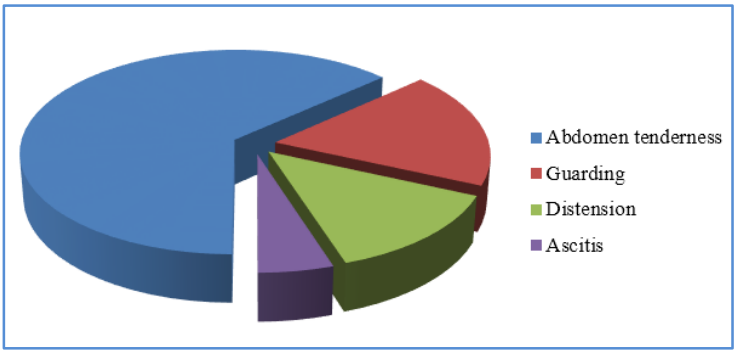

Figure 4

In our study, all the patient had abdominal tenderness (100%), followed by epigastric guarding (28.9%) and distension (21%). Some of the patients also presented with ascites (7.9%).

DOI: 10.14260/jemds/2015/1463

Etiology	No. of Patients	Percentage
Alcoholic	19	50
Gall stone	8	21.1
Idiopathic	11	28.9
Test statistics	**X^2= 5.105. p value=0.078**	

Table 5: Etiological factors

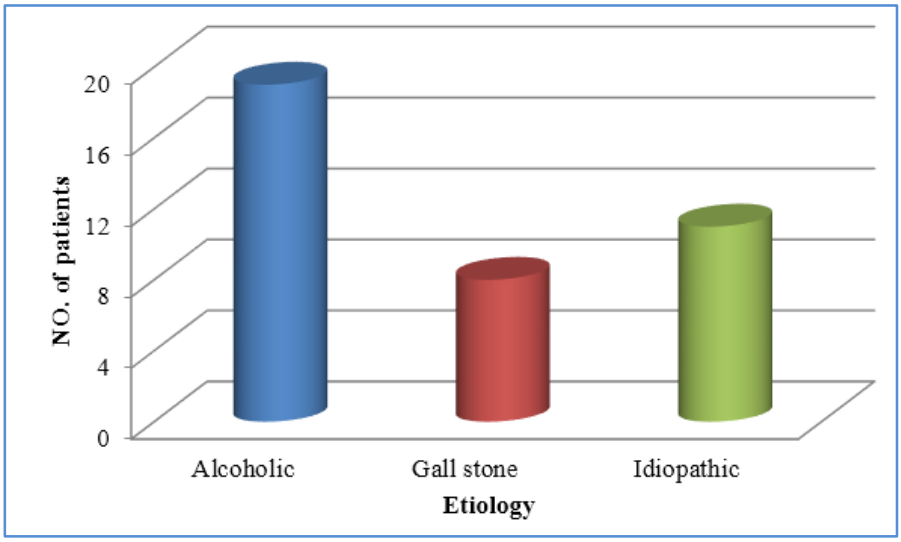

Figure 5

In our present study Alcoholism was the main etiological factor accounting for 50% of the cases, 21.1% of patients had biliary pancreatitis and the cause was unknown in 28.9% of patients.

Investigations	Positive	Percentage	X^2	P value
AGE (>55 years)	29	76.3%	10.528	0.009
RBS(>180mg/dl)	23	60.5%	1.684	0.194
BUN (>45mg/dl)	32	84.2%	17.789	0.000
Total count (>15,000 cells/mm^3)	26	68.4%	5.158	0.023
S. Calcium (<2mmol/L)	6	15.8%	17.789	0.000
S. Albumin (<32gm/L)	4	10.5%	23.684	0.000
AST(>200IU/L)@	3	7.9%	26.947	0.000
LDH(>600)	28	73.7%	8.56	0.004
PaO_2 (<60 mm of Hg)	7	18.4%	15.158	0.000

Table 6: Lab investigations

DOI: 10.14260/jemds/2015/1463

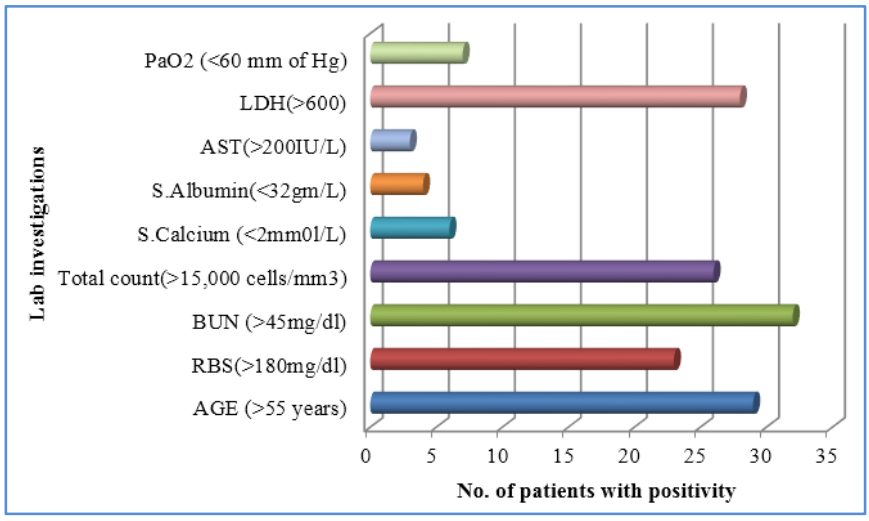

Figure 6

In our study, 76.3% were more than 55 years of age group, 60.5% had hyperglycemia, 84.2% had high Blood urea nitrogen. 68.4% presented with significant leukocytosis and 15.8% had hypocalcemia. 10.5% had low albumin and 7.9% had elevated liver enzymes. 73.7% had raised LDH levels and 18.4% had low partial pressure of oxygen.

FINDINGS	No. of Patients	Percentage
Only Bulky pancreas	16	42.1
Bulky pancreas With cholelithiasis	8	21.1
Bulky pancreas With ascitis	5	13.2
Bulky pancreas With peripancreatic collection	5	13.2
Non-diagnostic	4	10.5
Test statistics	**X^2=12.789 p value= 0.012**	

Table 7: Ultrasonography

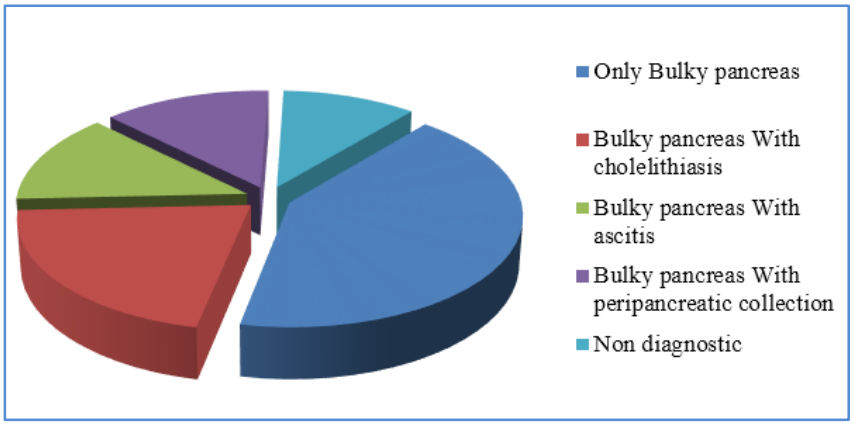

Figure 7

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Ultrasound of the abdomen was diagnostic in 89.5%% of the patients by identifying bulky pancreas. It picked up only bulky pancreas alone in 42.1% of patients, and additional cholelithiasis in 21.1% of patients, ascites in 13.2% and peripancreatic collection in 13.2%.

Chest x ray	No. of Patients	Percentage
Normal	34	89.5
B/L pleural effusion	4	10.5
Test statistics	**X^2=23.684 p value= 0.000**	

Table 8: Chest X-ray

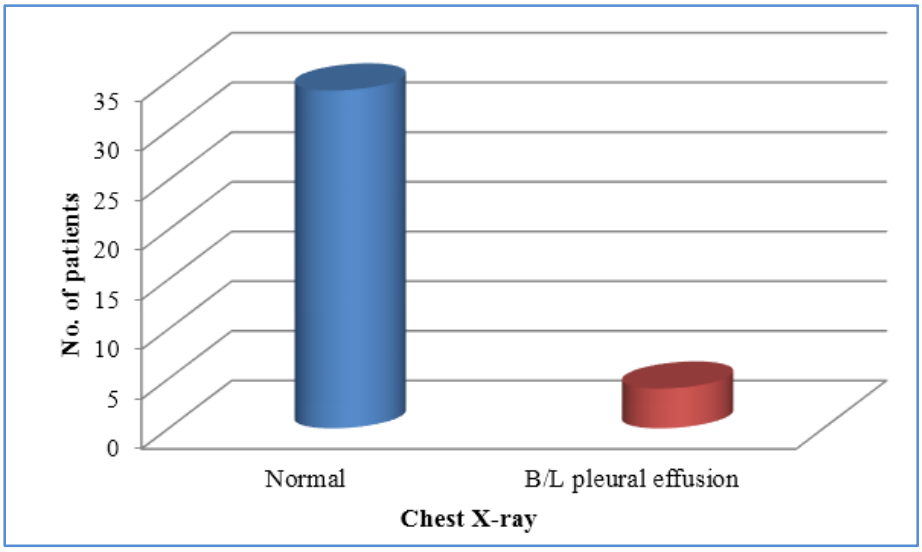

Figure 8

In our study, 10.5% had bilateral pleural effusion which was treated conservatively.

Treatment	No. of Patient	Percentage	X^2	P value
Fluid resuscitation	38	100	-	-
Oxygen	14	36.8	2.632	0.105
Analgesic	38	100		
Antibiotics	2	5.3	30.421	0.000
Anti emetics	35	92.1	26.947	0.000
Nasogastric tube aspiration	9	23.7	10.526	0.001

Table 9: Treatment given

DOI: 10.14260/jemds/2015/1463

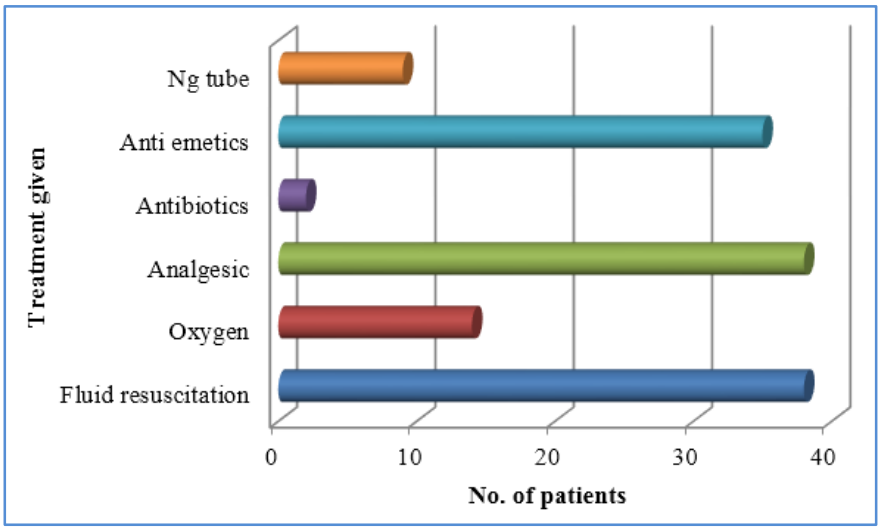

Figure 9

In our study, all patients' required fluid resuscitation (100%), 36.8% required oxygen. All patients required injectable analgesics. 5.3% had to be started on antibiotics. Nearly 92.1% required anti emetics and 23.7% required naso gastric tube aspiration.

Procedure	No. of patients	Percentage
Cholecystectomy	4	10.5
ERCP	0	0
None	34	89.5

Table 10: Procedures

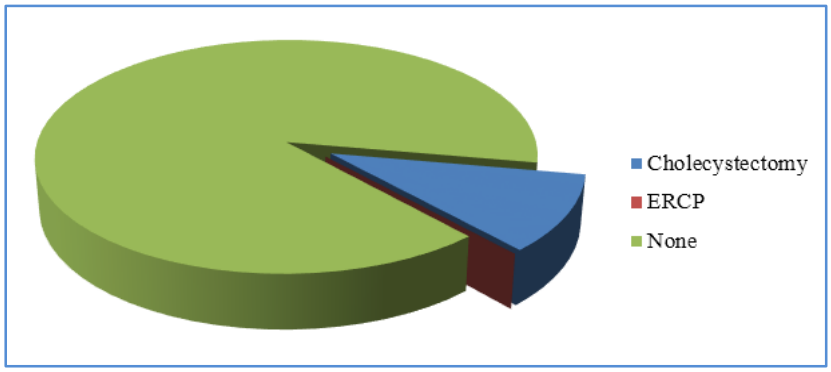

Figure 10

In our study, 4 of the 8 patient diagnosed to have gall stone induced pancreatitis underwent cholecystectomy (10.5%).

DOI: 10.14260/jemds/2015/1463

Complications	No. of Patients	Percentage	X^2	P value
Recurrence	4	10.5	23.684	0.000
Chronic pancreatitis	1	2.6	34.105	0.000
Pseudocyst	0	0	-	-
Necrosis	2	5.3	30.421	0.000
Abscess	0	0	-	-

Table 11: Complications

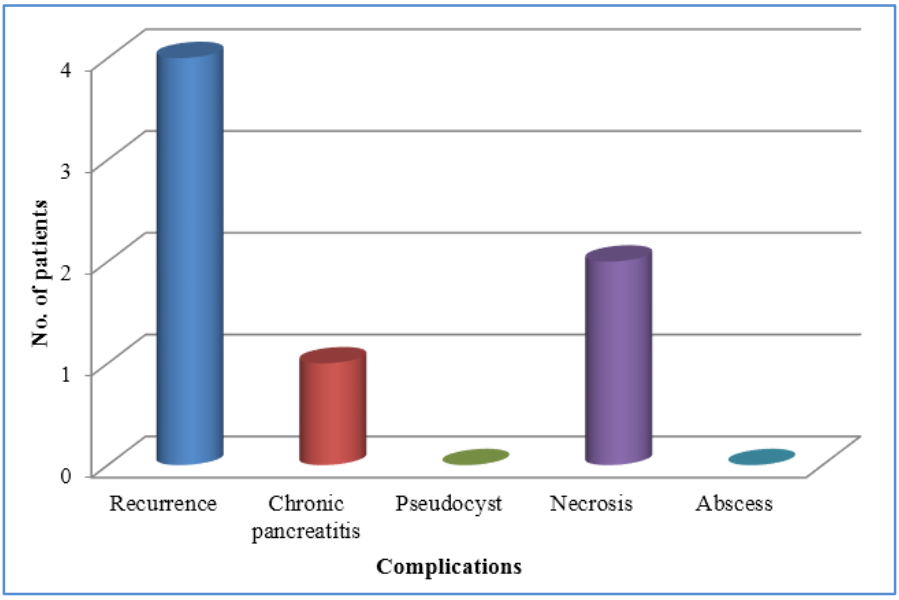

Figure 11

In our study, 10.5% had recurrence, 2.6% developed chronic pancreatitis and 5.3% developed necrosis. All patients were treated conservatively.

Severity		Results		Total
		Improved	Died	
0-3	Frequency	32	0	32
	Percentage	100%	0%	100%
>3	Frequency	5	1	6
	Percentage	83.3%	16.7%	100%
Total	Frequency	37	1	38
	Percentage	97.4%	2.6%	100%
Test Statistics	**Contingency coefficient=.355; P=.019 (NS)**			

Table 12: Glasgow Pancreatitis Severity Score

DOI: 10.14260/jemds/2015/1463

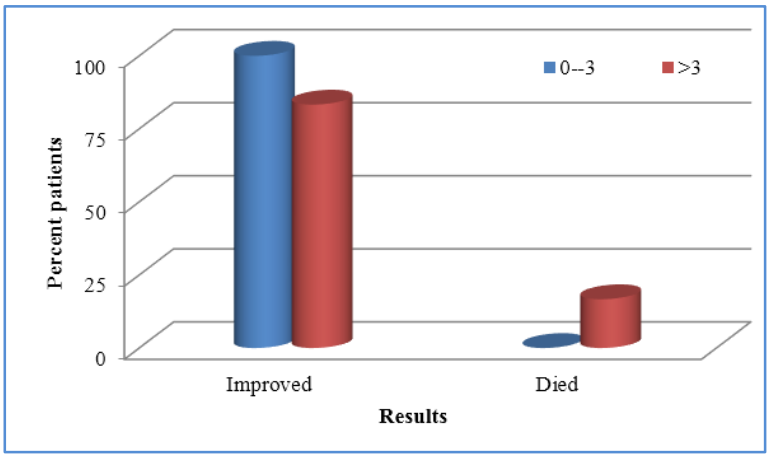

Figure 12

In our study, 32 people who were graded 0-3 according to Glasgow's severity index all improved (100%). In 6 people who were graded >3, 83.3% improved and 2.6% expired because of complications.

DISCUSSIONS: Acute pancreatitis is a common disease entity. Frequent occurrence and serious complications have brought into fore the issues regarding management.

While diagnosing a case of acute pancreatitis, a through history, a complete physical examination and biochemical tests are necessary. Imaging confirmation may be required. In this study, analysis of clinical presentation of acute pancreatitis was done. Relevant investigations were carried out and patients appropriately managed depending upon the etiology and severity of acute pancreatitis

Age: The mean age of presentation in our study was 43.1 years and is comparable to the study by Choudhuri G et al.[4] Other studies had late presentation in the 5th and 6th decade. This is probably because alcohol was the main etiological factor in our study which presents usually in the younger age group.

Mean	Buchler MW et al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Pupelis G et al[6]	Present Study
Age in years	55.1	44.89	35	47	43.1

Sex: There was a male predominance in our study with males accounting for 68.4% of patients and females accounting for 31.6%. The other studies also had a higher percentage of males. This again could be attributed to alcohol which was the main etiologic agent.

Sex	Buchler MW et al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Pupelis G et al[6]	Present Study
Male (%)	61	66.6	70.91	73.7	68.4
Female (%)	39	33.4	29.09	26.3	31.6

DOI: 10.14260/jemds/2015/1463

Etiology: Alcohol was the main etiological factor in our study and present in about 50% of patients. This was comparable to the study by Pupelis G et al.[6] In the other studies gall stone was the main etiological factor. The percentage of idiopathic cases was comparable.

Etiology	Buchler MW et Al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Pupelis G et al[6]	Sand J et al[7]	Present Study
Alcohol (%)	33	45.83	29.1	54	70	50
Biliary (%)	45	26.04	36.4	19	20	21.1
Idiopathic (%)	22	19.37	14.5	27	10	28.9

Serum Amylase Sensitivity: The sensitivity of serum amylase was 100% in the present study and was comparable to the study by Thomson[8] which was 95.6% sensitive.

Serum Amylase	Anand kashid et al[5]	Thomson et all[8]	Present Study
Sensitivity (%)	50.9	95.6	100%

Accuracy of USG Abdomen: USG was diagnostic in 88.5% of patients in our study and this was comparable to the study by Ammori et al.[9] It was diagnostic in 66.67% of patients in the study by Kashid et al[5] and this may be because USG is operator dependent and also because the view can be obscured by overlying bowel gas.

USG Abdomen	Anand Kashid et al[5]	Ammori BJ et al[9]	Present Study
Diagnostic (%)	66.67	86	88.5
Non diagnostic (%)	33.33%	14	11.5%

COMPLICATIONS: Although 13.2% of patients in the present study had ascites which was higher compared to other studies, the rate of pancreatic necrosis was more in other studies as against 5.3% in our study.

Complications	Buchler MW et al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Present Study
Acute fluid collection (%)	-	40.5	34.54	0
Pseudocyst (%)	2.45	24.9	0	0
Ascites (%)	-	-	0	13.2
Pleural effusion (%)	-	-	34.54	10.5
Pancreatic necrosis (%)	42.15	40.5	18.18	5.3
Pancreatic abscess (%)	0.5	0	5.45	0

PROCEDURE: Only 4(10.5%) of 8 patient with biliary pancreatitis underwent open cholecystectomy, and the others were managed conservatively. This low rate of intervention in our study was because, majority of our patients had mild disease, and also because alcohol was the most common etiology. Patients in the other studies underwent various procedures like ERCP with sphincterotomy, open and laparoscopic cholecystectomy, and pancreaticojejunostomy for pancreatic fistula, cystojejunostomy for pseudocyst and open drainage for pancreatic abscess.

DOI: 10.14260/jemds/2015/1463

Procedure	Bucher MW et al[2]	Kashid A et al[5]	Present Study
ERCP	28.4	20	0
Cholecystectomy	17.2	14.5	10.5
Necrosectomy	13.7	9.1	0

Duration of Hospital Stay: The duration of stay in mild cases being 6.2 days is comparable to the Choudhuri Get al.[4] The duration of stay in severe cases being 6.7 days was less compared to other studies.

Mean Hospital Stay	Buchler MW et al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Present Study
<3 (mild pancreatitis)	13	6.6	10	6.2
>3 (severe pancreatitis)	44.1	17.32	13.5	6.7

Glasgow Pancreatitis Severity Score: The patients were stratified according to Glasgow scoring system in to 0-3, mild pancreatitis or >3, having moderate to severe pancreatitis and compared with mild and sever pancreatitis in other studies. In our study 84.21% came under mild pancreatitis which was significantly higher compared to other studies.

Severity	Buchler MW et al[2]	Choudhuri Get al[4]	Kashid A et al[5]	Present Study
Mild disease (%)	58	47.7	52.73	84.21
Severe disease (%)	42	52.3	47.27	15.79

Mortality: The mortality rate in our study standing at 2.6% is less compared to other studies as the percentage of severe cases was more in the other studies. 1 patient died due to Multi organ dysfunction syndrome with severe acute pancreatitis that was categorized in severe pancreatitis according to Glasgow's scale.

Mortality	Buchler MW et al[2]	Choudhuri G et al[4]	Kashid A et al[5]	Present Study
Percentage (%)	4.4	6.5	5.45	2.6

CONCLUSIONS: The purpose of the present study was to evaluate the age and sex prevalence, the varied presentation, various diagnostic modalities and management of acute pancreatitis.

The findings of this study were compared with those available in literature. The results have been represented with tables and graphs for better understanding.

The Glasgow Scoring System remains a valid predicting system for the outcome in patients with acute pancreatitis. It is simple, easy to apply with good predictive value and can still be used in all primary, secondary and even tertiary hospital settings.

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