International Journal of Multidisciplinary Research and Development
Online ISSN: 2349-4182, Print ISSN: 2349-5979
Impact Factor: RJIF 5.72
www.allsubjectjournal.com
Volume 4; Issue 12; December 2017; Page No. 148-155

Clinical study and outcome of alcoholic and nonalcoholic acute pancreatitis presenting to a tertiary care center

Dr. Kemparaj T, Dr. Mridul GS
Department of General Surgery, Bangalore Medical College, Bangalore, Karnataka, India

Abstract
Introduction: Acute pancreatitis is a common condition involving the pancreas. The estimated incidence is about 3% of cases presenting with pain abdomen[1.] Gall stones and sustained alcohol abuse together account for 80% of acute pancreatitis. So the study is undertaken to study the various etiological factors and clinical factors of alcoholic and nonalcoholic acute pancreatitis and to assess the prognosis, outcome, management of an alcoholic and nonalcoholic acute pancreatitis.
Methodology: This study assess the various etiological factors and clinical factors of alcoholic and nonalcoholic acute pancreatitis and assess the prognosis, outcome, management of an alcoholic and nonalcoholic acute pancreatitis.
A total of 60 cases that meet the inclusion and exclusion criteria are included, Patients from Bowring and Lady Curzon and Victoria hospital attached to Bangalore Medical College and Research Institute selected during the study period from November 2015 to June 2017.
Results: In our study total 60 patients with acute pancreatitis were enrolled, 55% were alcoholic and remaining 45% were nonalcoholic. The mean age of presentation in our study was 39.2 years and in alcoholic it was 39.42 years, and nonalcoholic it was 39.07 years. In our present study there was a male predominance with males accounting for 90 percent in which 61.1 % are alcoholic and 38.9 percent are nonalcoholic with 9:1 male to female ratio. In our study 100 % of patients had tenderness, 3 % of alcoholic and 7.4 % of nonalcoholic presented as mass abdomen, and 21.2 % alcoholic and 7.4 % of nonalcoholic presented as ascites. In our present study 31.6 % present with hyperglycemia in which hyperglycemia is more in alcoholic (36.6 %) than nonalcoholic(25.9 %), 56 % of patient presented with hypocalcemia in more in nonalcoholic (59.5%) than alcoholic (54.54%), and 35 % had serum amylase level more than 600IU/L which is more raised in nonalcoholic (37%) than alcoholic (33.3%), 11.6% has WBC count >15000 cells/mm^3 which is more in alcoholic (15.1%) than nonalcoholic (7.04%) and 10 % has AST level > 200mg/dl which is more in nonalcoholic (11.1%) than alcoholic (9 %). USG abdomen was diagnostic in 93.3 % of the patients in our study.
Total of 18 patients developed complications 5% developed acute fluid collection among which, 13.3 % developed pseudocyst, 15 % had ascitis, 13.3 % had pleural effusion and 6.6 % developed pancreatic necrosis. Acute fluid collection and pseudocyst and pancreatic necrosis is more common in nonalcoholic than alcoholic. Ascites, pleural effusion is more common in alcoholic than nonalcoholic. One patient of nonalcoholic died of MODS and one of alcoholic died of GI bleeding. All of them managed conservatively, Of the 8 patient of biliary pancreatitis 7 underwent interval cholecystectomy, and 1 underwent ERCP + ES.
There were 13 recurrence of pancreatitis in which alcoholic pancreatitis recurrence is common than nonalcoholic pancreatitis.
The mean hospital stay was 7.59 day, duration of stay in mild cases being 5.78, The duration of stay for severe cases being 9.4 day. Duration of stay is almost equal in alcoholic and nonalcoholic pancreatitis
Conclusion: Acute pancreatitis is a common cause of acute abdomen in patients presenting to the surgical emergency department. Alcohol being the most common cause of acute pancreatitis in our study. Nonalcoholic pancreatitis contribute to a significant proportion of etiology of pancreatitis. Unless dealt with judiciously, they lead to recurrent episodes of pancreatitis and accompanying comorbidities. Prompt identification and diagnostic work up to identify the etiology of pancreatitis followed by appropriate treatment results in cure and prevention of untoward complications.

Keywords: alcoholic pancreatitis, nonalcoholic pancreatitis

Introduction
Acute pancreatitis is a common condition involving the pancreas. The estimated incidence is about 3% of cases presenting with pain abdomen [1]. Although most episodes are mild and self limiting, upto a 20% of patients develop severe attacks that can be fatal. Gall stones and sustained alcohol abuse together account for 80% of acute pancreatitis.
The relative frequency of these two factors depends on prevalence of alcoholism in the population studied[2]. Of the mechanical causes of acute pancreatitis, choledocholithiasis is the most common and between 36% and 63% will develop recurrent acute pancreatitis if stone persists. In about 10-30%, cause of acute pancreatitis is idiopathic, other rare causes include ischemia, drug induced, hyperparathyroidism, ERCP, hypercalcemia, trauma, pancreas divisum, autoimmune, hereditary, infectious, malnutrition, scorpion bite, hyperlipoprotenemia, pregnancy [1]. The severity of acute pancreatitis can be predicted based upon clinical, laboratory, and radiologic risk factors, various severity grading systems and serum markers.

Most episodes of acute pancreatitis (80%) are mild and self limiting, respond well to medical treatment, In contrast, severe pancreatitis is defined as pancreatitis associated with organ failure and/or local complications such as necrosis, abscess formation, or pseudocysts. Severe pancreatitis can be observed in 15–20% of all cases [2].

The management of acute pancreatitis has been controversial over the past decades, varying between a conservative medical approach on the one hand and an aggressive surgical approach on the other [3].

The IAP/APA 2012 guidelines provide recommendations concerning key aspects of medical and surgical management of acute pancreatitis[4]. There is increasing evidence towards conservative line of management. In spite of technical advances in medical and surgical fields, acute pancreatitis remains as a major cause of morbidity and mortality [3].

So the study is undertaken to study the various etiological factors and clinical factors of alcoholic and non alcoholic acute pancreatitis and to assess the prognosis, outcome, management of an alcoholic and nonalcoholic acute pancreatitis.

Material and Methods

Source of data

Patients from Bowring and Lady Curzon and Victoria hospital attached to Bangalore Medical College and Research Institute selected during the study period from November 2015 to June 2017 to a minimum of 60 cases.

Method of collection of data

Study Design: Cross Sectional study

Study Period: November 2015 to June 2017

Place of Study: Bowring and Lady Curzon hospital and Victoria hospital attached to Bangalore Medical College and Research Institute

Sample Size: 60 patients admitted in the different surgical units will be selected using simple randomization technique.

a. **Inclusion criteria:** In-patients with diagnosis of acute pancreatitis admitted to Victoria and Bowring and Lady Curzon Hospital attached to Bangalore medical college as defined by IAP criteria (The definition of acute pancreatitis is based on the fulfillment of '2 out of 3' of the following criteria: clinical (upper abdominal pain), laboratory (serum amylase or lipase >3 times upper limit of normal) and/or imaging (CT, ultrasonography). Aged 18 years and above
b. **Exclusion criteria:** Patients aged less than 18 years**.** Patients with chronic pancreatitis and acute on chronic pancreatitis
c. **Methodology:** After obtaining clearance and approval from the institutional ethical committee and written informed consent (Annexure I), in-patients with acute pancreatitis fulfilling the inclusion criteria will be enrolled in the study (Annexure II). All patients included in the study are informed about the nature of disease and the treatment to be undertaken if any. Demographic data, the nature of the complaints, a detailed history and clinical examination, appropriate investigations to identify etiological factors and management is recorded in a predesigned Performa including the surgical intervention undertaken. The data is then tabulated and subjected to statistical analysis. Follow up investigations and management if any are also recorded in the data.

Results

In our study total 60 patients with acute pancreatitis were enrolled, in which 33 patients were alcoholic (9 recurrence) and remaining 27 were nonalcoholic (4 recurrence).

1 patient underwent necrosectomy (alcoholic pancreatitis) and 7 went chlolecystectomy for biliary pancreatitis and one patient underwent ERCP sphinctertomy.

Table 1

Etiology	No of patients:	Present study:%
Alcoholic	33	55
Nonalcoholic	27	45

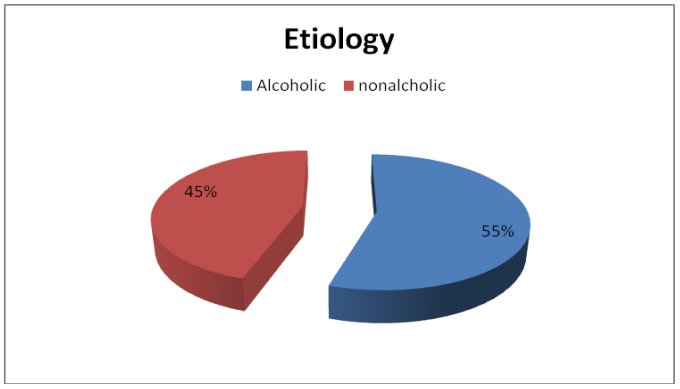

Fig 1

Age and sex distribution

Table 2

Age group	Male (n=54)		Female (n=6)		Total (60)	
	No of patients	%	No of patients	%	No of patients	%
18-30	8	13.3	0	0	8	13.33
31-40	28	46.6	1	1.6	29	48.33
41-50	10	16.6	4	6.6	14	23.33
51-60	7	11.6	1	1.6	8	13.33
61-70	1	1.6	0	0	1	1.6

Table 3

Mean	Present study: years	
Age in Years:	39.2	
	Alcoholic	Nonalcoholic
	39.42	39.07

Table 4

Sex	Present study	Comparison	
		Alcoholic	Nonalcoholic
Male%	90	61.1%	38.9%
Female%	10	0	100%

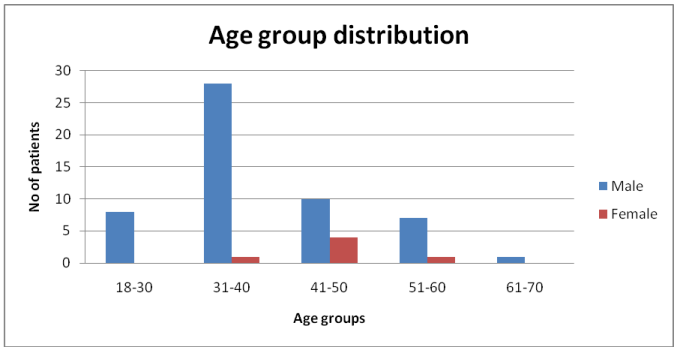

Fig 2

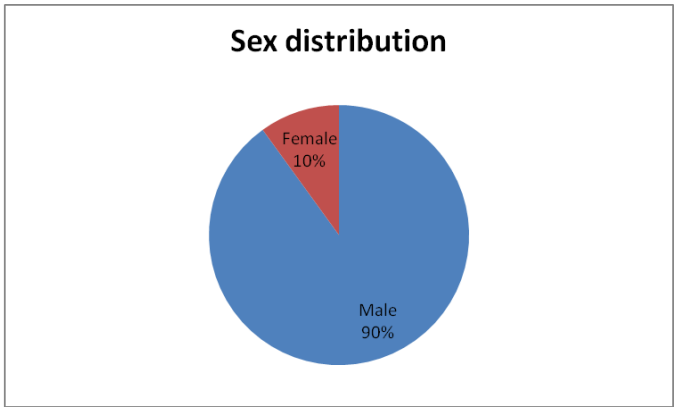

Fig 3

The above table shows analysis of age and sex distribution. In our study, the youngest was 20 years old and eldest was 62 years old. The highest incidence was noted in the age group of 31-40 years, accounting for 48.33 % of the patients. The mean age of presentation in our study was 39.2 years and in alcoholic it was 39.42 (33 /60), and non alcoholic it was 39.07 years. In our present study there was a male predominance with males accounting for 90 percent in which 61.1 % are alcoholic and 38.9 percent is nonalcoholic with 9:1 male to female ratio.

Symptomatolgy

Table 5

Clinical features	No of patients (n=33)	Alcoholic %	No of patients (n=27)	Nonalcoholic %
Pain abdomen	33	100	27	100
Nausea/vomitting	32	96.9	27	100
Abdominal distension	6	18.1	6	22.2
Fever	2	6	7	11.1
Jaundice	5	15.1	2	7.4

In our study 100% of the patients presented with pain abdomen in alcoholic and nonalcoholic pancreatitis, 96.9 % of alcoholic and 100% of nonalcoholic present with nausea/vomiting. 18.1 % of alcoholic and 22.2 % of nonalcoholic present with abdominal distension. 6 % of alcoholic and 11.1 % of nonalcoholic present with fever and 5 % of alcoholic and 7.4 % of non alcoholic present with jaundice.

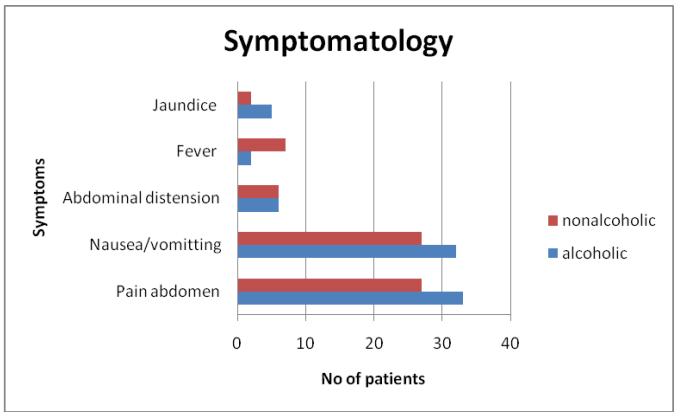

Fig 4

Signs

Table 6

Signs	No of patients (n=33)	Alcoholic: %	No of patients (n=27)	Nonalcoholic:%
Tenderness	33	100	27	100
Mass abdomen	1	3	2	7.4
Ascitis	7	21.2	2	7.4

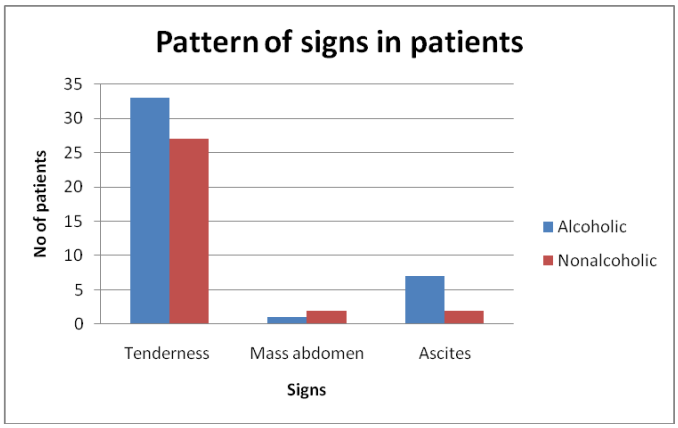

Fig 5

In our study 100 % of patients had tenderness, 3 % of alcoholic and 7.4 % of nonalcoholic presented as mass abdomen, and 21.2 % alcoholic and 7.4 % of nonalcoholic presented as ascites.

Etiological factors

Table 7

Etiology	No of patients:	Present study:%
Alcoholic	33	55
Nonalcoholic	27	45
Biliary	14	23.3
idiopathic	12	20
Hypertrycholestriemia	2	3

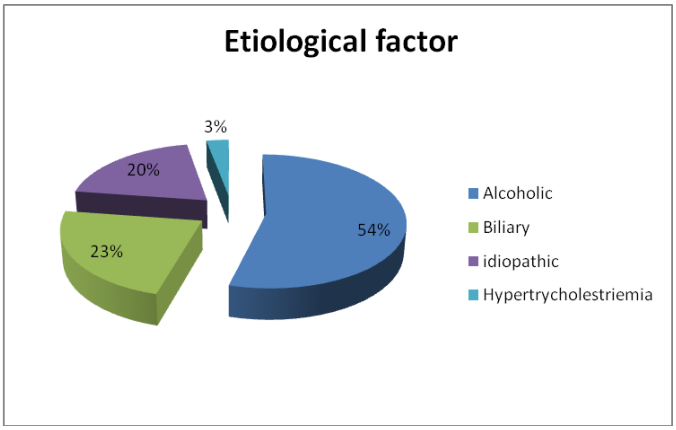

Fig 6

In our present study alcoholism was the main etiological factor accounting for 55 % and non alcoholic include 45 % in which 23.3 % is biliary pancreatitis and 12 % is idiopathic and 3 % is hypertrycholestremia.

Laboratory investigations

Table 8

Investigations	No of patients (n=33)	Alcoholic %	No of patients (n=27)	Nonalcoholic%	Total percentage:
RBS>180mg/dl	12	36.36	7	25.9	31.6
S.amylase >600IU/L	11	33.3	10	37	35
S.calcium < 8mg/dl	18	54.54	16	59.25	56.6
WBC count >15000 cells/mm3	5	15.1	2	7.04	11.6
AST>200mg/dl	3	9	3	11.1	10

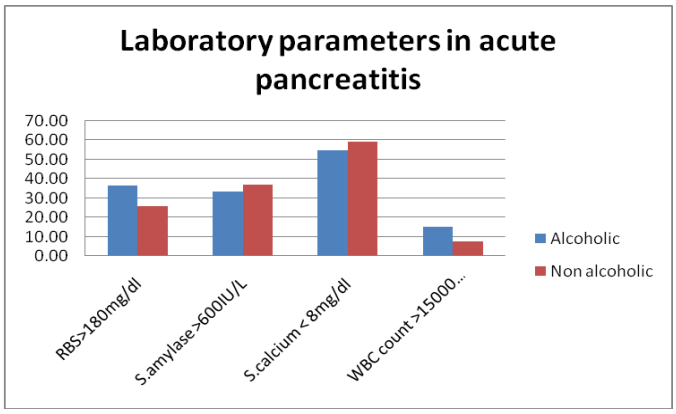

Fig 7

In our present study 31.6 % present with hyperglycemia in which hyperglycemia is more in alcoholic (36.6 %) than nonalcoholic(25.9 %), 56 % of patient presented with hypocalcemia in more in nonalcoholic (59.5%) than alcoholic (54.54%), and 35 % had serum amylase level more than 600IU/L which is more raised in nonalcoholic (37%) than alcoholic (33.3%), 11.6% has WBC count >15000 cells/mm3 which is more in alcoholic (15.1%) than nonalcoholic (7.04%) and 10 % has AST level > 200mg/dl which is more in nonalcoholic (11.1%) than alcoholic (9 %).

USG Examination

Table 9

USG abdomen	Present study
Diagnostic	93.3

USG abdomen was diagnostic in 93.3 % of the patients in our study.

Severity of acute pancreatitis

In our study 68.3 %of patients had mild disease in which alcoholic cause is 40 percent and nonalcoholic cause is 28.3%. 31.6 % contribute severe cases which according to Atlanta 2012 is dived into moderately severe pancreatitis and severe pancreatitis. In which moderate pancreatitis constitute 26.6 % with equal contribution from alcoholic and nonalcoholic pancreatitis and severe constitute 5 % in which alcoholic contribution is 1/3rd of nonalcoholic.

Table 10

Severity	No of patients n=60	Present study %	No of patients n=33	Alcoholic %	No of patients n=27	Nonalcoholic %
Mild	41	68.3	24	40	17	28.3
Severe	19	31.6	9	15	10	16.6

Table 11

	No of patients n=60	Present study %	No of patients n=33		Alcoholic %	No of patients n=27	Nonalcoholic %
Severe pancreatitis (31.6%)	Moderately severe pancreatitis	16	26.6	8	13.3	8	13.3
	Severe pancreatitis	3	5	1	1.6	2	3.3

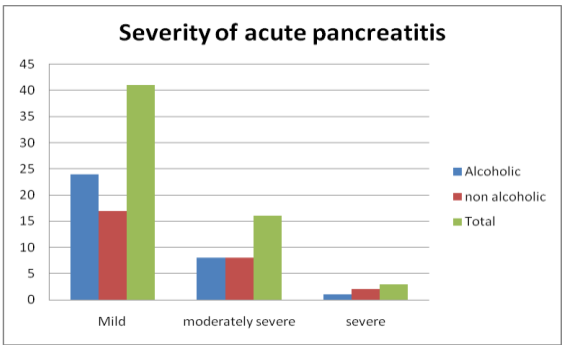

Fig 8

Complications

Although15 %of patients in the present study have ascitis which was higher compared to other studies which is more in alcoholic than nonalcoholic, the rate of pancreatic necrosis was more in other studies as against 6.6 % in our present study, more in nonalcoholic, pseudocyst is 13.3 in which 10 % in nonalcoholic and 3.3 percent in alcoholic. Organ failure was seen 15 % whereas its much higher in other studies. 1.6 % (one non alcoholic patient) has Superior mesenteric vein thrombosis, 1.6 (one alcoholic patient) has GI bleed and died. All other complications were managed conservatively.

Table 12

Complications	No of patients n=60	Present study	No of patients n=33	Alcoholic %	No of patients n=27	Nonalcoholic %
Acute fluid collection	5	8.3	2	3.3	3	5
Pseudocyst	8	13.3	2	3.3	6	10
Ascitis	9	15	7	11.7	2	3.3
Pleural effusion	8	13.3	6	10	2	3.3
Pancreatic necrosis	4	6.6	1	1.6	3	5
Venous thrombosis	1	1.6	1	1.6	0	0
Organ failure	9	15	5	8.4	4	6.6
GI bleeding	1	1.6	1	1.6	0	0
Pancreatic abscess	0	0	0	0	0	0

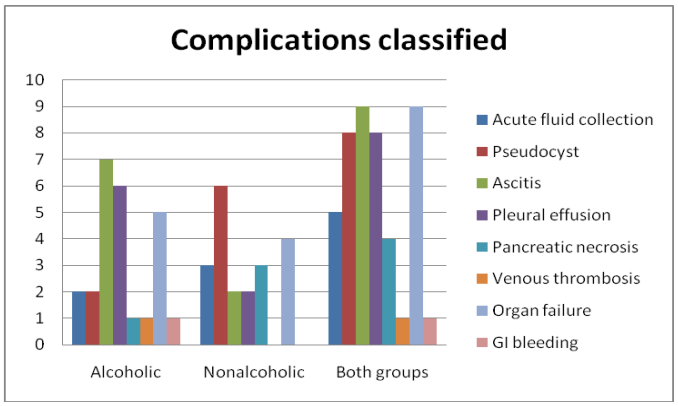

Fig 9

Procedure

Seven (11.6%) patient with biliary pancreatitis underdone cholecystectomy, another patient (1.6%) with biliary pancreatitis underwent ERCP with sphincterotomy. One patient with alcoholic pancreatitis undergone necrosectomy. The other patients 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 other studies underwent various procedures like ERCP with sphincterotomy, cholecystectomy, pancerticojejunostomy for pancreatic fistula, cystojejunostomy for pseudocyst and open drainage of abscess.

Table 13

Procedure	No of patients n=60	Present study: %
ERCP+ES	1	1.6
Cholecysectomy	7	11.6
Necrosectomy	1	1.6
Pancreaticojejunostomy	0	10
Abscess drianage	0	0
Cystojejunostomy	0	0

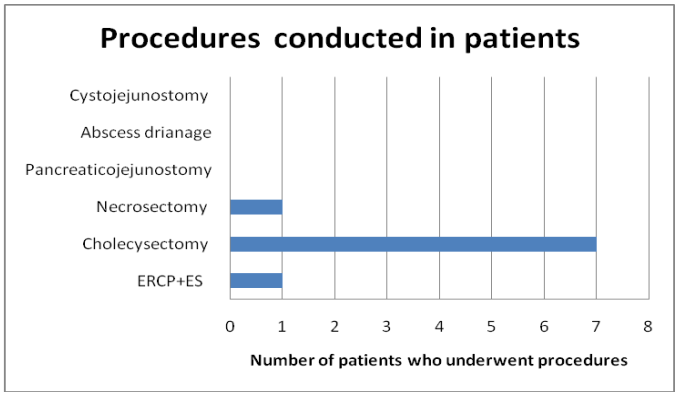

Fig 10

Hospital stay

Overall hospital stay is 7.59 days. The duration of stay in mild cases being 5.78. The duration of stay in severe cases being 9.4 days. Duration is almost comparable in alcoholic and nonalcoholic cases.

Table 14

Mean hospital stay	Present study (Days)	Alcoholic (Days)	Non alcoholic (Days)
Mild disease	5.78	5.61	5.97
Severe disease	9.4	9.49	9.31

Mortality

The mortality rate in our study at 3.3%. One patient died of GI bleeding (alcoholic) and other died of sepsis with MODS (nonalcoholic).

Table 15

Mortality	Present study	Alcoholic	Nonalcoholic
Percentage	3.3	1.6	1.6

Discussion

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. Radiological 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 39.2 years and in alcoholic it was 39.42 (33 /60), and non alcoholic it was 39.07 years and is comparable with study of kashid *et al* and choudhuri *et al*. other studies has a late presentation.

Table 16

Mean	Kashid *et al* [6]	Choudhuri *et al* [7]	Pupelis G *et al* [8]	Buchler *et al* [5]	Present study:	
Age in Years:	35	44.89	47	55.1	39.2	
					Alcoholic	Nonalcoholic
					39.42	39.07

Sex

There was a male predominance in our study with males accounting for 90 percent in which 61.1 % are alcoholic and 38.9 percent is nonalcoholic. The other studies although had a higher percentage of males the ratio of male to female ratio is low then our study 9:1 male to female ratio.

Table 17

Sex	Kashid *et al.* [6]	Choudhuri *et al.* [7]	Pupelis G *et al.* [8]	Buchler *et al.* [5]	Present study	comparison	
						Alcoholic	Nonalcoholic
Male%	70.1	66.6	73.7	61	90	61.1	38.9
Female%	29.9	33.4	26.3	39	10	0	100

Etiology

Alcohol was the main etiological factor in our study and present in about 55 % of patients. This was pupelis G *et al* study. In the other studies gallstone was the main etiological factor. The percentage of idiopathic cases was comparable.

Table 18

Etiology	Kashid *et al* [6]	Choudhuri *et al* [7]	Pupelis G *et al* [8]	Buchler *et al* [5]	Sand J *et al* [3]	Present study:
Alcoholic	29.1	45.83	54	33	70	55
Nonalcoholic	70.9	54.17	46	67	30	45
Biliary	36.4	26.02	19	45	20	23.3
idiopathic	14.5	19.37	27	22	10	20
Hypertrycholestriemia	0	0	0	0	0	3

Clinical features

The clinical features in the present study were comparable to the study by kashid A *et al*. [5, 4].

Table 19

Clinical features	Kashid A *et al* [6]	Present study	alcoholic	nonalcoholic
Pain abdomen	92.73	100	100	100
Nausea/vomiting	60	98.3	96.9	100
Abdominal distension	16.36	20	18.1	22.2
Fever	20	8.3	6	11.1
Jaundice	7.27	11.6	15.1	7.4

Serum amylase sensitivity

The sensitivity of serum amylase was 96.6 % in the present study and was comparable to the study by thomson [8], but in the study by kashid a *et al.* [6] it was 50.9% sensitive and this can be attributed to the early presentation of patients to our institution**.**

Table 20

Serum amylase	Anand kashid *et al* [6]	Thomson *et al* [7]	Present study
Sensitivity	50.9	95.6	96.6

Accuracy of USG abdomen

USG was diagnostic in 93.3 % 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 A *et al* and this may be because USG is operator dependent and also because the view can be obscured by overlying bowel gas.

Table 21

USG abdomen	Anand kashid *et al.* [6]	Ammori BJ *et al* [9]	Present study
Diagnostic	66.67	86	93.3

Severity of acute pancreatitis

68.3 %of patients had mild disease in our study in which alcoholic cause is 40 percent and nonalcoholic cause is 28.3% whereas studies has higher proportion of severe diseases.31.6 % contribute severe cases which according to Atlanta 2012 is dived into moderately severe pancreatitis and severe pancreatitis. In which moderate pancreatitis constitute 26.6 % with equal contributions from alcoholic and nonalcoholic pancreatitis. And severe constitute 5 % in which alcoholic contribution is 1/3rd of nonalcoholic. Ours is a government funded institute and most of the patients belonging to low socioeconomic status with acute pain refereed, and this may be the reason for less percentage of severe cases.

Table 22

Severity	Kashid A *et al* [6]	Choudhuri *et al* [7]	Buchler MW *et al* [5]	Present study		
					alcoholic	nonalcoholic
Mild	52.73	47.7	58	68.3	40	28.3
Severe	47.27	52.3	42	31.6	15	16.6

Table 23

	Present study		Alcoholic	Nonalcoholic
Severe pancreatitis (31.6%)	Moderately severe pancreatitis	26.6	13.3	13.3
	Severe pancreatitis	5	1.6	3.3

Complications

Although15 %of patients in the present study have ascites which was higher compared to other studies which is more in alcoholic than nonalcoholic, the rate of pancreatic necrosis was more in other studies as against 6.6 % in our present study, in nonalcoholic, pseudocyst is 13.3 in which 10 % in nonalcoholic and 3.3 percent in alcoholic. Organ failure was seen 15 % whereas its much higher in other studies and this is because most of our patients had mild disease.

Table 24

Complications	Kashid A *et al* [6]	Chodhuri *et al* [7]	Buchler *et al* [5]	Present study		
					alcoholic	nonalcoholic
Acute fluid collection	34.54	40.5	-	8.3	3.3	5
Pseudocyst	0	24.9	2.45	13.3	3.3	10
Ascitis	0	-	-	15	11.7	3.3
Pleural effusion	34.54	-	-	13.3	10	3.3
Pancreatic necrosis	18.18	40.5	42.15	6.6	1.6	5
Venous thrombosis	0	0	0.5	1.6	1.6	0
Organ failure	29	40.5	36.28	15	8.4	6.6
GI bleeding	1.8	3.1	0	1.6	1.6	0
Pancreatic abscess	5.45	0	0.5	0	0	0

Procedure

7 (11.6%) patient with biliary pancreatitis underdone cholecystectomy, another patient (1.6%) with biliary pancreatitis underwent ERCP with sphincterotomy. The other patients 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 other studies underwent various procedures like ERCP with sphincerotomy, cholecystectomy, pancerticojejunostomy for pancreatic fistula, cystojejunostomy for pseudocyst and open drainage of abscess.

Table 13

Procedure	Kashid A *et al*	Buchler MW *et al*	Present study
ERCP+ES	20	28.4	1.6
Cholecysectomy	16.3	26.5	11.6
Necrosectomy	9.1	13.7	0
Pancreaticojejunostomy	3.64	0.5	1.6
Abscess drainage	5.45	0.5	0
Cystojejunostomy	0	2.5	0

Duration of hospital stay

The duration of stay in mild cases being 5.78 is comparable to the other studies. The duration of stay in severe cases being 9.4 days was less compared to other studies.

Table 14

Mean hospital stay	Kashid A *et al*	Choudhuri G *et al*	Buchler MW *et al*	Present study
Mild disease	10	6.6	13	5.78
Severe disease	13.5	17.32	44.1	9.4

Mortality

The mortality rate in our study at 3.3% is less compared to studies as the percentage of severe cases was more in other studies.

Table 15

Mortality	Kashid A *et al*	Choudhari G *et al*	Buchler MW *et al*	Present study
Percentage	5.45	6.5	4.4	3.3

Conclusion

Acute pancreatitis is a common cause of acute abdomen in patients presenting to the surgical emergency department. Alcohol being the most common cause of acute pancreatitis in our study. Non alcoholic pancreatitis contributes to a significant proportion of etiology of pancreatitis. Unless dealt with judiciously, they lead to recurrent episodes of pancreatitis and accompanying comorbidities. Prompt identification and diagnostic work up to identify the etiology of pancreatitis followed by appropriate treatment results in cure and prevention of untoward complications.

References

1. Russell RCG. The Pancreas. In: Bailey and Loves' Short Practice of Surgery. Russell RCG, Williams NS, Bulstrode CJK, editor. 24th ed. London: Hodder Arnold, 2004, 1115-1132
2. Clancy TE, Ashley SE. Management of acute pancreatitis. In: Maingot's abdominal operations. Zinner MJ, Ashley SW,editor. 12th ed. Massachusetts: McGraw Hill, 2013, 1097-1098
3. Werner J, Feuerbach S, Uhl W, Buchler MW. Management of acute pancreatitis: from surgery to interventional intensive care. Gut. 2005; 54(3):426-436
4. Working Group IAP/APA Acute Pancreatitis Guidelines, IAP/APA evidence-based guidelines for the management of acute pancreatitis. Pancreatology. 2013; 13(4/2):e1-15.
5. Yadav D, Lowenfels A. The Epidemiology of Pancreatitis and Pancreatic Cancer. Gastroenterology. 2013; 144(6):1252-1261.
6. Cotton PB, Lehman G, Vennes J, *et al*. Endoscopic sphincterotomy complications and their management: an attempt at consensus. Gastrointest Endosc. 1991; 37(3):383-93.
7. Christoforidis E, Goulimaris I, Kanellos I, *et al*. Post-ERCP pancreatitis and hyperamylasemia: patient-related and operative risk factors. Endoscopy. 2002; 34(4):286-92.
8. Vandervoort J, Soetikno RM, Tham TC, *et al*. Risk factors for complications after performance of ERCP. Gastrointest Endosc. 2002; 56(5):652-6.
9. Steinberg W, Tenner S. Acute pancreatitis. N Engl J Med 1994; 330(17):1198-210.