

A Retrospective & Prospective Comprehensive Study of Acute Pancreatitis (Diagnosis, Course & Management)

Dr. Vijay K. Saini¹, Dr. Ashfaque Husain², Dr. Ajay Malviya³, Dr. Ganpat Choudhary⁴, Dr. Sunita Malviya⁵, Dr. Arvind⁶

^{1,2,6}(Residents, Department Of Gen Surgery, Dr. S.N. Medical College/ RUHS, RAJ.,INDIA)

³(Sen. Prof. & HOD, Department Of Gen Surgery, Dr. S.N. Medical College/ RUHS, RAJ.,INDIA)

⁴(Asso. Prof Department Of Gen Surgery, Dr. S.N. Medical College/ RUHS, RAJ.,INDIA)

⁵(Sen. Resident, Department Of Gen Surgery, Dr. S.N. Medical College/ RUHS, RAJ.,INDIA)

Abstract : Mild acute pancreatitis is associated with minimal organ dysfunction and uneventful recovery and it lacks the described features of severe acute pancreatitis. Severe acute pancreatitis is associated with organ dysfunction and other complications, such as necrosis, abscess or pseudocyst. Most common aetiology of acute pancreatitis was biliary tract disease (41%) followed by alcohol (31%) and idiopathic in (25%). 83% cases had Glasgow score ≤ 2 & were predicted as having mild disease while 17% cases with Glasgow score > 2 were predicted to have severe disease. Balthazar grade B & C 1-3 predominate in mild disease; whereas Balthazar grade D & E and 5-8 predominate in severe disease. CTSI is calculated on the basis of Balthazar grading plus extension of the pancreatic necrosis. CTSI score 1-3 predominate in mild disease; whereas CTSI score 5-8 predominate in severe disease. 80 (96.39%) patients recovered uneventfully and were discharged. It can be concluded that acute pancreatitis is a disease commonly affecting Hindu youth in the prime of their age primarily due to increasing alcohol abuse amongst the community as opposed to females where cholelithiasis is responsible for the disease. Prognosis is better with patients having mild form of disease who respond well to conservative management or surgery on biliary system but surgical intervention should not be withheld for too long in severe disease and necrosectomy and/or external drainage should be performed wherever necessary.

Keywords: Acute pancreatitis, Glasgow score, Balthazar grade, CTSI, Necrosectomy

I. Introduction

Acute Pancreatitis¹ is an acute inflammatory process of the pancreas with variable involvement of other tissues or remote organ systems. (Bradley E.L et al)¹ Biliary tract stone disease and alcoholism accounts for 80-90% of cases. Rest of the cases accounted for either by idiopathic disease or by variety of miscellaneous causes including trauma, surgery, drugs, hereditary, infection, toxins, hyperparathyroidism, hypercalcemia, hyperlipidemia and mechanical obstruction. Diagnosis is based on combination of clinical presentation and elevation of blood amylase (≥ 3 times normal) and lipase (≥ 2 times normal). Serum bilirubin, alkaline phosphatase and serum AST/ALT are elevated in biliary acute pancreatitis. Leucocytosis, raised BUN, fall in haematocrit, rise in CRP and hypoxia are the systemic markers of acute pancreatitis. If the biochemical markers are normal, contrast enhanced CT scan of abdomen can confirm the clinical impression of acute pancreatitis. CECT gives an objective assessment of the disease state. System of grading the CT information (Balthazar Score) is based on the degree of pancreatic swelling, amount of fluid in peripancreatic tissue and degree of non-perfusion of pancreas. More than 80% of cases of acute pancreatitis are mild and managed by conservative treatment. Only 20% cases are of severe necrotizing pancreatitis and needs intensive care, multiple organs supports and surgical interventions.

II. Observations And Discussion

This retrospective and prospective study was conducted on 100 patients admitted in various wards of associated group of hospitals attached to Dr. Sampurnanand Medical College, Jodhpur with the diagnosis of acute pancreatitis over a period of one year. A total of 100 patients of acute pancreatitis were studied..

Age distribution in acute pancreatitis

Age		
≤ 20	3	3
21-30	14	14
31-40	32	32
41-50	17	17
51-60	16	16

61-70	11	11
>70	7	7
Grand Total	100	100

The mean age at admission was 45.82 years (Range 18-96yr) & maximum cases (32%) belonged to the fourth decade of life.

Sex And Religion Distribution In Acute Pancreatitis

68% patients were male and 32% were female. (Male female ratio was 2.12:1) .A majority 86% patients were Hindus and only 14% were Muslims.

Aetiology of acute pancreatitis

Aetiology	No. of patients	%
Biliary	41	41
Alcohol	31	31
Idiopathic	25	25
Post ERCP	2	2
Infection	1	1
Total	100	100

Most common aetiology of acute pancreatitis was biliary tract disease (41%) followed by alcohol (31%) and idiopathic (25%). The most common aetiology of acute pancreatitis in male was alcohol (45.59%) followed by idiopathic (30.88%) and biliary pathology (23.53%). The most common aetiology of acute pancreatitis in female was biliary pathology (78.13%) followed by idiopathic (12.50%), post ERCP (6.25%) and infection (3.13%).

Total Glasgow score of patients of acute pancreatitis-83% cases had Glasgow score ≤ 2 & were predicted as having mild disease while 17% cases with Glasgow score >2 were predicted to have severe disease.

Serum amylase and Serum lipase in acute pancreatitis-Serum amylase was raised ≥ 3 times the normal upper limit in 73% of cases and <3 times in 27% of the patients. Serum lipase levels were elevated in all severe cases & 90.36% mild disease.

Complications grouped according to Glasgow score in acute pancreatitis -In mild disease, 22.89% developed local complications while none of them progressed to develop systemic complications. In severe disease as many as 58.82% patients developed local complications and 23.53% had systemic complications.

Balthazar Grading In Acute Pancreatitis

Balthazar grade	Mild		Severe		Total	
	No. of patients	%	No. of patients	%	No. of patients	%
A	0	0.00	0	0.00	0	0
B	6	17.14	0	0.00	6	12
C	13	37.14	1	6.67	14	28
D	13	37.14	5	33.33	18	36
E	3	8.57	9	60.00	12	24

Balthazar grade B & C 1-3 predominate in mild disease; whereas Balthazar grade D & E and 5-8 predominate in severe disease.

CTSI grading in acute pancreatitis

CT SI	Mild		Severe		Total	
	No. of patients	%	No. of patients	%	No. of patients	%
0-1	5	14.29	0	0	5	10
2-3	22	62.86	0	0	22	44
4-6	8	22.86	12	80	20	40
7-10	0	0.00	3	20	3	6

CTSI is calculated on the basis of Balthazar grading plus extension of the pancreatic necrosis. CTSI score 1-3 predominate in mild disease; whereas CTSI score 5-8 predominate in severe disease.

Overall complications in cases grouped according to CTSI

None of the patients with CTSI of 0-1 had complications, while 36.36% patients with CTSI of 2-3, 95% with CTSI 4-6 and all patients with CTSI 7-10 had complications.

Local complication in cases grouped according to CTSI

None of the patients with CTSI of 0-1 had local complication. While 36.36% patients with CTSI of 2-3, 85% with CTSI 4-6 and all patients with CTSI 7-10 had local complications.

Systemic complications in cases grouped according to CTSI

None of the patients with CTSI of 0-3 had systemic complications, while 10% patients with CTSI of 4-6, 66.66% with CTSI 7-10 had systemic complications.

Outcome of patients grouped according to CTSI

CTSI	No. of cases	Discharged		LAMA		Expired	
		No.	%	No.	%	No.	%
0-1	5	5	100.00	0	0	0	0
2-3	22	22	100.00	0	0	0	0
4-6	20	13	65.00	1	5.00	6	30.00
7-10	3	1	33.33	0	0	2	66.66

All 27 patients with CTSI of 0-3 were discharged after uneventful recovery. Out of 20 patients with CTSI of 4-6, 13 (65%) were discharged and 6 (30%) expired. Only one patient with CTSI of 7-10 could be discharged while 2(66.66%) patients succumbed to the disease. 87% were managed conservatively and 13% patients underwent various surgical procedures.

Interventional (Radiological/Endoscopic) And Surgical Management Of Acute Pancreatitis

Days	Mild disease		Severe disease		Total	
	No. of patients	%	No. of patients	%	No. of patients	%
CT guided aspiration	2	2.41	4	23.53	6	6
ERCP/Stenting	2	2.41	0	0.00	2	2
ERCP/Sphinterotomy	2	2.41	0	0.00	2	2
Cholecystectomy	4	4.82	2	11.76	6	6
Necrosectomy	0	0.00	3	17.65	3	3
External drainage	1	1.20	3	17.65	4	4

Outcome in patients of acute pancreatitis

Out of 83 patients with mild disease of acute pancreatitis, 80 (96.39%) patients recovered uneventfully and were discharged. While among those with severe disease only 47.06% could be discharged and 47.06% patients expired.

Out of total of 100 patients studied maximum cases (32%) belonged to the fourth decade of life. The mean age at admission was 45.82 years (Range 18-96yr) .These finding are consistent with the study conducted by McEntee et al² where the mean age was 42.4 years (Range 20-69 years). In the present study, sex ratio was 2.12:1 (Male 68, Female 32). This was consistent with the study by WJ Gillesie et al³ where male:female ratio 2:1. In another study by S.R. Thomas et al⁴ sex ratio was 1.05:1. In the present study, a majority 86% of patients of acute pancreatitis were Hindu and only 14% were Muslims. In this study alcohol consumption was the commonest aetiology in males (45.59%) followed by idiopathic (30.88%) and biliary tract disease

(23.53%). Biliary aetiology was commonest among females (78.13%) followed by idiopathic (12.5%). 6.25 and 3.13% female patients develop acute pancreatitis following ERCP and infection. These findings are in accordance with the study by SR Thomas et al⁴ where biliary tract disease accounted for 30% in males and 53% in females whereas alcohol was implicated in 26.5% of males and only 3% of females. The plausible explanation for this discrepancy in alcohol as aetiology is probably due to changing trends of alcoholism in our community. Serum amylase was raised ≥ 3 times the normal upper limit (normal value 0-90 IU/L) in 73% of cases and < 3 times 27% patients. Serum amylase was raised ≥ 3 times the normal upper limit in 72.29% of cases and < 3 times 27.71% patients with mild disease. Serum amylase was raised ≥ 3 times the normal upper limit in 76.47% of cases and < 3 times 23.53% patients with severe disease. Serum lipase was raised above normal level in 92% of cases of acute pancreatitis. It was elevated in all cases with severe disease and in 90.36% cases with mild attack. The findings vary in studies conducted by Raffaele et al⁵ who found serum amylase to be elevated in 97% and lipase in 100% of the cases and another study conducted by Lister J. Lifton et al⁶ which showed serum amylase to be raised in 70% of the cases and lipase in 63%. In mild disease, 22.89% developed local complications while none of them progressed to develop systemic complications. In severe disease as many as 58.82% patients developed local complications and 23.53% had systemic complications. Majority of patients (36%) belonged to Balthazar grade D, while 28, 24 and 12% had Balthazar grade C, E & B of the disease respectively. According to Balthazar grading, patients with normal pancreas with mild pancreatitis are graded as A while patients with focal or diffuse enlargement of the gland, including contour irregularities and inhomogenous attenuation but without peripancreatic inflammation are labelled as B. Patient with abnormalities seen in grade B plus peripancreatic inflammation are graded C & those with grade C plus associated single fluid collection and grade C plus two or more peripancreatic fluid collections or gas in the pancreas or retroperitoneum are labelled belong to grade D and E of Balthazar grade. CTSI is calculated on the basis of Balthazar grading plus extension of pancreatic necrosis. According to CTSI, majority of patients (44%) belong to CTSI 2-3 followed by 40% to CTSI 4-6 & 10 and 6% belong to CTSI 0-1 & 7-10 respectively.

95% & 36.36% of the patients who developed complications belonged to CTSI 4-6 & 2-3 respectively. All patients who had CTSI 7-10 developed complications while no complications were observed in patients with CTSI 0-1. All patients with CTSI 7-10 developed local complications while 66.6% had systemic complications. 85% of the patients with CTSI 4-6 developed local complications while systemic complications were present in only 10% of the patients. Systemic complications were absent in patients with CTSI 0-1 and 2-3. These findings are consistent with Sanctis et al⁷ who evaluated the role of CT scan in acute pancreatitis and concluded that CT grade and severity index correlated significantly with the occurrence of local complications and hence best defined the local anatomic abnormality in acute pancreatitis. All patients with CTSI of 0-3 could be discharged & with no mortality in the group. Only 65 & 33.33% of the patients with CTSI score 4-6 & 7-10 respectively could be discharged with a mortality of 30 & 66.66% respectively in this group. In recent larger studies conducted by Simchuket al⁸, acute pancreatitis patients with CTSI of more than 5 were found to have 8 times the mortality, were 17 times more likely to have a prolonged hospital course. Nealon, William H MD et al⁹ who assessed the appropriate timing of cholecystectomy in patients presented with moderate to severe gall stone associated acute pancreatitis with peripancreatic fluid collection and concluded that cholecystectomy should be delayed in patients who survived an episode of moderate to severe acute biliary pancreatitis with demonstrable peripancreatic fluid collection or pseudocyst. Surgery can be delayed until the pseudocyst resolves or persists beyond six weeks at which time pseudocyst drainage can safely be combined with cholecystectomy. CT guided aspiration was performed to know the state of infection in necrosis was done in 2.41% of mild and 23.53% of severe cases of acute pancreatitis. ERCP & stenting/sphincterotomy was performed to 2.41% is in mild cases only. Cholecystectomy was performed in 4.82% patients with mild and 11.76% with severe attack of acute pancreatitis. Necrosectomy was done in 17.65% cases with severe disease and external drainage in another 17.65%. In one case of mild disease drainage was instituted. In the present study, 96.39% of the patients with mild acute pancreatitis could be discharged following recovery. The mortality rate was 1.20% in this group of patients. In contrast only 47.06% of the patients with severe acute pancreatitis could be discharged after recovery. The mortality was as high as 47.06% in this group. An overview suggests that 88% of the with acute pancreatitis recover & 9% succumb of the disease. 3% of the patients left against medical advice or absconded during treatment or various reasons. These findings are consistent with the study of John Ranson¹⁰ which shows a mortality of 28% in severe acute pancreatitis and 0.9% mortality in mild acute pancreatitis.

III. Conclusion

So, it can be concluded that acute pancreatitis is a disease commonly affecting Hindu youth in the prime of their age primarily due to increasing alcohol abuse amongst the community as opposed to females where cholelithiasis is responsible for the disease. Prognosis is better with patients having mild form of

disease who respond well to conservative management or surgery on biliary system but surgical intervention should not be withheld for too long in severe disease and necrosectomy&/or external drainage should be performed wherever necessary.

References

- [1]. Bradley EL et al. A clinically based classification system for acute pancreatitis. Summary of the International symposium of acute pancreatitis, Atlanta, GA, Sept. 11 through 13. *Arch. Surgery* 1993; 128: 586-590.
- [2]. McEntee GP, Gillen P, Peel ACG. Alcoholic induced pancreatitis: Social & Surgical aspects. *Br. J. Surg.* 1987; 74: 402-404.
- [3]. W.J. Gillesie. Observation on acute pancreatitis. *Brit. J. Surg.* 1973; 60: 63-65.
- [4]. SR Thomas MD, BS Stanely, Bruce E. Clin. profile of acute pancreatitis. *Ann. Of Int. Med.* 1987; 112: 532-538.
- [5]. Pezzilli, Raffaele MD, Billi, Paola MD, Barakat B MD, Federico MD. Lipase- amylase ratio does not determine the etiology of Acute pancreatitis: Another Myth Bites the dust. *Jour. of Clin.Gastroentro.* 1999 June; 26(1): 34-38.
- [6]. Laster J. Lifton K.A. Stickns, Desider A. Pragay, Leomand A Katz. Pancreatitis and lipase- A revualtion with a five minute turbid metric lipase determination *JAMA* July 1, 1974: 47-50.
- [7]. De-Sanctis D.T., Lee MJ., Gazelle G.S., Boland G.W., Halpern E.F., Sainis, Mueller P.P. Prognostic indicator in acute pancreatitis-CT vs APACHE II. *Clin. Radiol.* 1997 Nov.; 52 (ii): 842-848.
- [8]. Simchuk EJ, Tracverso LW, Nukui Y, Kazarek RA. Computed Tomography Severity Index is a predictor of outcomes for severe pancreatitis. *Am J Surg* 2000; 179: 352-5.
- [9]. Nealon, William H, Bawduniak John, Walsev EM. Appropriate timing of cholecystectomy in patients who presented with moderate to severe Gall stone associated acute pancreatitis with peripancreatic fluid collections. *Ann. Of surg.* June 2004; 239 (6): 741-751.
- [10]. John H.C. Ranson et al. Acute pancreatitis- where are we? *Surgical clinics of N.America* Feb.1981; Vol 61.