Original Research Paper

General Surgery

CLINICAL PROFILE, SEVERITY AND OUTCOME IN PATIENTS WITH ACUTE BILIARY PANCREATITIS AS PER REVISED ATLANTA CLASSIFICATION, 2012.

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ABSTRACT

BACKGROUND- Acute Pancreatitis (AP) is an inflammatory process of the pancreas with varying degree of involvement of regional tissues or remote organ systems.Most common etiology being gallbladder stones and alcohol abuse.It is a common problem worldwide and early detection of severity may lead to better management and outcome of this disease. This study aim to study the clinical profile, assesment of severity and outcome of patients with acute biliary pancreatitis based on Revised Atlanta Classification, 2012.

METHODS- A total of 36 patients diagnosed with acute biliary pancreatitis and their clinical profile, assesment of severity and outcome were reviewed as per revised Atlanta classification, 2012.

RESULTS- This study concluded that acute biliary pancreatitis is more common in females in age group between 41-60 years of age. Epigastric pain and vomiting are the most common presenting symptoms. Elevated serum amylase/lipase levels are the important biochemical serum markers for early diagnosis but their quantative values had no correlation with severity of the disease. Respiratory failure is the most common organ failure. Nearly half of the patient had mild form of the disease. USG is the good imaging modality for early diagnosis of the disease and CECT is the modality of choice to assess the severity of inflammatory process and local complications but should be reserved for a particular group of patients. Early diagnosis and severity of the disease results in better patient outcome.

KEYWORDS : Acute biliary pancreatitis, Revised Atlanta classification, 2012.

INTRODUCTION-

Acute Pancreatitis (AP) is an inflammatory process of the pancreas with varying involvement of regional tissues or remote organ systems with potentially devastating consequences. Gall stones and alcohol abuse accounts for nearly 70% of all cases of AP.[1] Other etiological factors includes drugs, hyperparathyroidism, hypercalcaemia, post ERCP, abdominal trauma, ampullary tumour, pancreas divisum, autoimmune pancreatitis, hereditary pancreatitis, viral infections, malnutrition, scorpion bite and idiopathic.[2] The diagnosis of mild disease may be missed and death may occur before diagnosis in 10% patients with severe disease.[3-6] The Revised Atlanta Classification, 2012 includes a clinical assessment of severity and provides more objective terms to describe the local complications of AP.

AIIMS AND OBJECTIVES-

To study the clinical profile, assesment of severity and outcome in patients of Acute biliary pancreatitis based on Revised Atlanta Classification, 2012.

MATERIALS AND METHODS:

This study was conducted in the Department of General Surgery, Dr. RGMC, Hamirpur(H.P.) A total of 36 patients diagnosed with acute biliary pancreatitis were included in the study and their clinical profile, severity and outcome was studied. Patients with recurrent attacks of AP, age <18 years and acute on chronic pancreatitis were excluded from this study. Accordingly patients were stratified into mild (no organ failure, no local or systemic complications), moderately severe (organ failure that resolved within 48 hours; transient organ failure and/or local or systemic complications without persistent organ failure) and severe acute pancreatitis (persistent organ failure i.e. more than 48 hours) based on Revised Atlanta Classification, 2012(Annexure 1) by using Modified Marshal Scoring System (Annexure 2).

Biochemical and radiological investigations were accordingly to assess the severity and organ dysfunction.

OBSERVATIONS AND RESULTS:

1.Sex distribution- Out of total 36 patients with acute biliary pancteatitis, 26 (72.2%) were females and 10 (27.8%) were males with the female to male ratio of 2.6:1.

Table -1 Sex Distribution

Sex	Number of patients	Percentage
Female	26	72.2
Male	10	27.8
Total	**36**	**100**

2. Age Distribution – In our study, age of the patients ranged from 27 to 79 years with a mean age of 52.1+/-13.4 years. 8 patients (22.22%) were less than 40yrs, 20 patients (55.55%) in the age group of 41-60 years, followed by 8 patients (22.22%) more than 60 year of age.

Table -2 Age Distribution

Age group	No. of patients	Percentage
Less than 40yrs	08	22.22
41-60	20	55.55
>60	8	22.22

3. Clinical features - The most common presenting symptoms in patients were abdominal pain(100%), followed by vomiting (86%), abdominal distension (75%), oliguria(64%), jaundice (39%), dyspnoea (25%) and fever(3%).

Table 3- Clinical features

Symptoms	Patients	Percentage
Pain consistent with AP	36	100
Vomiting	31	86
Abdominal distension	27	75
Oliguria	23	64
Jaundice	14	39
Dyspnoea	9	25
Fever	1	3

4.Labarotory parameters- In our study mean serum amylase and lipase levels were 1749.67±1230.1 and 3053.89±2186.88 U/L respectively.Serum creatinine value was 0.81 ± 0.22mg/dl .

Table 4(a)- Laboratory parameters (mean ± SD)

Parameter	Mean	SD
S. Amylase (U/L)	1749.67	1230.09
S. Lipase (U/L)	3053.88	2186.88
S. Creatinine (mg/dl)	0.81	0.22

Serum amylase levels were higher in those who presented early, within 24 hours of onset of symptoms. Mean serum amylase was 13476, 11480 and 12170U/L in mild, moderately severe and severe AP respectively.

Table 4(b)-Serum Amylase levels-

Severity	Serum amylase levels(U/L)
Mild	13476
Moderately Severe	11480
Severe	12170

Table 4(c)-Serum Lipase levels-

S. Lipase	Patients (n)	Percentage
<67	0	0
67-200	1	2.78
201-500	2	5.56
501-1000	3	8.33
1001-5000	24	66.66
>5000	6	16.66

In our study serum lipase levels were elevated more than 3 times of upper limit of normal values in all patients.Out of 6 patients with serum lipase level >5000 U/L, 4 patients had acute severe biliary pancreatitis, one patient had moderate and one had acute mild biliary pancreatitis.

Serum creatinine levels were normal in all patients.

5.Radiological parameters- USG evidence of AP was present in 18 (50%) patients with evidence of cholelithiasis in all patients.

TABLE 5(a)- Ultrasonography (USG) in AP

Ultrasonography	No. Of Cases	Percentage
Evidence of AP	18	50
No evidence of AP	18	50

In our study, CECT abdomen was done in only 7 patients to look for severity and any complications. Modified CT severity index score was 4-6 in 6 (16.67%) patients and 10 in 1(2.8%) patient.

Table 5(b)- Modified CTSI in patients with AP.

Modified CTSI Score	Patients	Percentage
0-2	0	0
4-6	6	16.67
8-10	1	2.8

In our study, Pleural Effusion (PE) was noted in the 09 patients (02 with USG and 07 with CECT), Acute Pancreatic Fluid Collection (APFC) were noted in 07 patients, Ascites in 03 patients, and acute necrotising pancreatitis was noticed in 1 patient.

Table 5(C)- Complications

Complication	Patients	Percentage
Pleural effusion	09	25
APFC	07	19.44
Ascites	03	8.33
ANP	01	2.77

6. Organ failure- 14 patients (38.88%) out of 36 had organ failure at the time of presentation.

Table 6(a) Organ failure at the time of presentation as per Modified Marshall score

Organ system	Patients	Percentage
Respiratory	14	38.88
Renal	0	0
CVS	0	0

Organ system	Score				
	0	1	2	3	4
Respiratory	13	9	12	2	0
Renal	36	0	0	0	0
Cardiovascular	36	0	0	0	0

All 14 patients had respiratory system failure according to Revised Atlanta Classification, 2012 by application of Modified Marshal Scoring System. No patient at the time of presentation had renal or cardiovascular system failure.

TABLE 6(b)- Organ Failure after 48 hrs of presentation as per Modified Marshall score

Organ system	Patients	Percentage
Respiratory	9	25
Renal	1	2.77
CVS	0	0

After 48 hours of admission.

Organ system	Score				
	0	1	2	3	4
Respiratory	23	4	8	1	0
Renal	35	0	1	0	0
Cardiovascular	36	0	0	0	0

It was observed that 9 patients (25%) had persistent respiratory failure and out of these, 1patient (2.77%) had respiratory as well as renal failure.

7. Severity of acute biliary pancreatitis - 36 patients included in study were categorised to mild, moderately severe and severe Acute biliary pancteatitis according to Revised Atlanta classification by applying Modified Marshal Scoring System for organ dysfunction. 18 patients (50%) had mild, 9 patients (25%) had moderately severe and 9 patients (25%) had severe Acute biliary pancreatitis.

TABLE 7- Severity of acute biliary pancreatitis

Severity	Patients	Percentage
Mild	18	50
Moderately severe	09	25
Severe	09	25

8.Length of hospital stay was in the range of 2 to 10 days with mean of 4.83 days for mild, 4 to 15 days with mean of 8.55 days for moderately severe and 5 to 19 days with mean of 9.44 days for severe acute biliary pancreatitis.

TABLE 8- Length of hospital stay

Severity	Length of hospital stay in days	
	Range	Mean
Mild acute biliary pancreatitis	2-10	4.83
Moderately severe acute biliary pancreatitis	4-15	8.55
Severe acute biliary pancreatitis	5-19	9.44

ANNEXURE-1

Revised Atlanta classification 2012 for acute biliary pancreatitis

A- Mild acute pancreatitis	1. No organ failure. 2. No local or systemic complicaitons.

B-	Moderately severe acute pancreatiits	1.	Organ failure that resolves within 24 h(transient organ failure) and /or
		2.	Local or systemic complications without persistent organ failure.
C-	Severe acute pancreatitis: persistent organ failure(>48h)	1.	Single organ failure
		2.	Multiple organ failure

ANNEXURE-2

Criteria for organ failure based on Modified Marshall scoring system:

ORGAN SYSTEM	SCORE				
	0	1	2	3	4
Respiratory (PaO2 / FiO2)	>400	301-400	201-300	101-200	<101
Renal (serum creatinine, mg/dl)	<1.4	>1.4 to <1.8	>1.9 to <3.6	>3.6 to <4.9	>4.9
Cardiovascular (SBP, mm hg)	>90	<90, fluid responsive	<90, fluid unresponsive	<90, ph<7.3	<90, ph<7.2

For non-ventilated patients, the fio2 can be estimated from below:

Supplemental oxygen(l/m) Fio2 (%)
Room air 21
2 25
4 30
6-8 40
9-10 50
A score of 2 or more in any system defines the presence of organ failure.

REFERENCES

1. Moreau JA, Zinsmeister AR, Melton LJ, DiMagno EP. Gallstone pancreatitis and the effect of cholecystectomy: a population-based cohort study. Mayo Clin Proc. 1988;63(5):466-73.
2. Bhattacharya S. The Pancreas. In Williams NS, Bulstrode CJK, O'Connell PR, editors.Bailey & Love's short practice of surgery.26th edition. New York: CRC Press; 2008.
3. Block S, Maier W, Bittner R, Büchler M, Malfertheiner P, Beger HG. Identification of pancreas necrosis in severe acute pancreatitis: imaging procedures versus clinical staging. Gut. 1986;27(9):1035-42.
4. Simchuk EJ, Traverso LW, Nukui Y, Kozarck RA. Computed tomography severity index is a predictor of outcomes for severe pancreatitis. Am J Surg. 2000;179(5):352-5.
5. Baig SJ, Rahed A, Sanjay Sen. A Prospective study of the aetiology, severity and outcome ofacute pancreatitis in Eastern India. Tropical Gastroenterology. 2008;29:20-2.
6. Garg PK, Khanna S, Bohidar NP. Incidence, spectrum and antibiotic sensitivity pattern of bacterial infections among patients with acute pancreatitis. J GastroenterolHepatol. 2001;16:1055-9.
7. Reid GP, Williams EW, Francis DK, Lee MG. Acute pancreatitis: A 7 year retrospective cohort study of the epidemiology, aetiology and outcome from a tertiary hospital in Jamaica. Annals of Medicine and Surgery. 2017 Aug 1;20:103-8.
8. Sanjay P, Yeeting S, Whigham C, Judson HK, Kulli C, Polignano FM, Tait IS. Management guidelines for gallstone pancreatitis. Are the targets achievable.JOP. 2009 Jan 8;10(1):43-7.
9. Chauhan PV, Patel RR. Research and Analytical Study of 50 Cases of Acute Pancreatitis. International Journal of Science and Research.2014;3(7):475-478.
10. Michael J G, Stephen E R. Hospital admission for acute pancreatitis in an English population, 1963-98: database study of incidence and mortality. BMJ. 2004;328:1466-9.
11. Prasad HL et al.Clinical profile of patients with acute pancreatitis.Int J Res Med Sci. 2016 Jul;4(7):2994-29970.
12. Bhimwal RK et al.A prospective study of clinical, biochemical and radiological features in pancreatitis.IntJ Adv Med. 2017 Oct;4(5):1386-93.
13. Manandhar S, Giri S, Poudel P, Bhandari RS, Lakhey PJ, Vaidya P. Acute biliary pancreatitis: an experience in a tertiary level hospital of Nepal. Indian J Surg. 2013;75(6);449-53.
14. Lankisch, PG, Burchard-Recker, IS, Lehrich, D Underestimation of acute pancreatitis: Patients with only a small increase in amylase/lipase levels can also have or develop severe acute pancreatitis. Gut. 1999;44:542–4.
15. Narender NR et al. A clinical study of acute pancreatitis. IntSurg J. 2016 Feb;3(1):96-100.
16. Silverstein W, Isikoff MB, Hill MC, Barkin J. Diagnostic imaging of acute pancreatitis: prospective study using CT and sonography. AJR Am J Roentgenol. 1981 Sep;137(3):497-502.
17. Bollen TL. Imaging assessment of etiology and severity of acute pancreatitis. RadiolClin N Am 2012;50:429-45.
18. Bollen TL, Singh VK, Maurer R et al.A comparative evaluation of radiologic and clinical scoring systems in the early prediction of severity in acute pancreatitis. The American Journal of Gastroenterology. 2012;107(4):612–9.
19. Arvanitakis M, Delhaye M, De MV et al. Computed tomography and magnetic resonance imaging in the assessment of acute pancreatitis. Gastroenterology. 2004;126:715–23.
20. Balthazar EJ. Acute pancreatitis: assessment of severity with clinical and CT evaluation. Radiology 2002;223:603-13.
21. Zaheer A, Singh VK, Qureshi RO, Fishman EK. The revised Atlanta classification for acute pancreatitis: updates in imaging terminology and guidelines. Abdominal imaging. 2013 Feb 1;38(1):125-36.
22. Bollen TL , Singh VK , Maurer R et al. Comparative evaluation of the modified CT severity index and CT severity index in assessing severity ofacute pancreatitis . AJR Am J Roentgenol 2011;197:386-92.
23. Datta IK, Haque MN, Bhuiyan TM. Clinical profile, degree of severity and underlying factors of acute pancreatitis among a group of Bangladeshi patients. IMC J Med Sci. 2018;12(1):06-10
24. Nitin Nagpal, Salvinder Singh Toor, D. S. Sidhu. Clinical profile of Acute Pancreatitis in Malwa region of Punjab and its correlation with Balthazar CT Severity Index. IAIM. 2016;3(5):1-7.
25. Diculescu M, Ciocirlan M, Ciocirlan M, Stanescu D, Ciprut T, Marinescu T. Predictive factors for pseudocysts and peripancreatic collections in acute pancreatitis. Rom J Gastroenterol. 2005;14:129-34.
26. Sahu B et al. Severity assessment of acute pancreatitis using CT severity index and modified CT severity index: correlation with clinical outcomes and severity grading as per the Revised Atlanta Classification. Indian J Radiol Imaging. 2017;27(2):152–60.
27. Pandol, S.J., Saluja, A.K., Imrie, C.W. et al, Acute pancreatitis: bench to the bedside. Gastroenterology. 2007;132:1127-51.
28. Nawaz H, Mounzer R, Yadav D, Yabes JG, Sliyka A. Revised Atlanta and Determinant-Based Classification: Application in a Prospective Cohort of Acute Pancreatitis Patients. Am J Gastroenterol.2013; 108:1911–7.