ORIGINAL RESEARCH PAPER

Volume-8 | Issue-4 | April-2019 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A PROSPECTIVE CLINICAL STUDY OF ACUTE PANCREATITIS AND ASSESSMENT OF PROGNOSTIC INDICATORS FOR ITS SEVERITY AND ASSOCIATED COMPLICATIONS

Surgery

Dr Abhesinh Chauhan Kothari medical and research institute, Bikaner, rajasthan, india

Dr Surendra Prakash Chouhan* Kothari medical and research institute, Bikaner, rajasthan, india *Corresponding Author

ABSTRACT

BACKGROUND: Acute pancreatitis is a disease with extremely different clinical Expressions. It is an acute inflammatory process of the pancreas with Variable involvement of other tissues and organ systems and it is associated with elevated pancreatic enzyme levels in blood and urine. The assessment of severity at the initial medical examination plays important role in introducing adequate early treatment and transfer of patient to medical facility that can cope with severe acute pancreatitis . It is done by various scoring systems like BISAP , Ranson, APACHE II and Modified CT severity score. Systemic complications are usually common during the first week of the disease. Systemic inflammatory response system(SIRS) is main event responsible for the systemic complication. Peri- pancreatic fluid collections and pancreatic necrosis are local complication of acute pancreatitis.

MATERIAL AND METHODS: Hopsital based, prospective, observational study of about 100 patients admitted in Kothari medical and research institute, Bikaner, Rajasthan with inclusion and exclusion criteria.

RESULT: Out of these hundred patient, 62 were males and 38 were female .Most patients were present with epigastric pain that was present in about 99% of cases.We concluded that APACHE II had sensitivity of 98.59%, BISAP had sensitivity of 98.27% and modified CTSI had sensitivity of 96.15% in predicting the severity of acute pancreatitis .APACHE II had predictive value 75%, BISAP had predictive value 61% and modified CTSI had predictive value 80%.We concluded that pleural effusion is the most common complication of acute pancreatitis and it was found in 50% of cases.

Conclusions : Acute pancreatitis is the common differential diagnosis in patients presenting with acute abdomen in casualty. The BISAP score is the most reliable clinical score to predict the severity, organ failure and mortality because it has less component and can be measured at any time but modified CTSI is the most reliable score overall, because it gives direct measurement of pancreatic inflammation and local complication.

KEYWORDS

INTRODUCTION

Acute pancreatitis is a disease with extremely different clinical Expressions[1]. It is an acute inflammatory process of the pancreas with Variable involvement of other tissues and organ systems and it is associated with elevated pancreatic enzyme levels in blood and urine[2].

According to revised Atlanta classification, diagnosis of acute pancreatitis requires two of the following three features (1) Abdominal pain consistent with acute pancreatitis (acute onset of severe persisting epigastric pain occasionally radiating to the back); (2) Serum lipase activity (or amylase activity) atleast three times greater than the upper limit of normal; and (3) Characteristic finding of acute pancreatitis on contrast enhanced tomography or less commonly magnetic resonance imaging (MRI) or Transabdominal ultrasonography. Stone which formed in gall bladder and migrated in to the common bile duct and excessive alcohol intake account for about 75% of pancreatitis. Drugs abdominal trauma, post- Endoscopic retrograde cholangiopancreaticography and autoimmune are the other important causes.About 15% of the cause remain unknown despite through investigation.

The assessment of severity at the initial medical examination plays important role in introducing adequate early treatment and transfer of patient to medical facility that can cope with severe acute pancreatitis . It is done by various scoring systems like BISAP , Ranson, APACHE II and Modified CT severity score. Systemic complications are usually common during the first week of the disease.Events caused by premature activation trypsinogens and other zymogens within the pancreatic acinar cells.Systemic inflammatory response system(SIRS) is main event responsible for the systemic complication. Peri-pancreatic fluid collections and pancreatic necrosis are local complication of acute pancreatitis.

MATERIAL AND METHODS

Hopsital based, prospective, observational study of about 100 patients admitted in Kothari medical and research institute, Bikaner, Rajasthan with inclusion and exclusion criteria

INCLUSION CRITERIA

All patients of acute pancreatitis reporting to KOTHARI MEDICAL AND RESEARCH INSTITUTE, BIKANER had at least two of the three criteria for inclusion in the study:

1. Positive history and clinical finding
2. Minimal elevation of three times normal for amylase and two times normal for lipase from the highest value of reference range.
3. Radiological evidence of acute pancreatitis based on Xray abdomen /Ultrasound/CECT

EXCLUSION CRITERIA

1. Patients of chronic pancreatitis defined by multifocal dilations, stricture, and irregular contour of the main pancreatic duct with or without calcification or stones picked up on the one of the following : CECT
2. Patients of peptic ulcer disease.
3. Patients of mesenteric vascular occlusion.
4. Patient not consenting for inclusion in the study
5. Pregnant women

APACHE-II[1]

1. Physiologic points :

- Temperature
- MAP (Mean Arterial Pressure)
- Heart rate
- Respiratory rate
- Oxygenation (PaO2)
- Arterial pH
- Serum sodium
- Serum potassium
- Hematocrit
- White cell count
- Glasgow coma score

2. Age points

3. Chronic health points :

a. Liver
b. Cardiovascular
c. Respiratory
d. Renal
e. Immunocompromised

1+2+3 = Total Score

Score >8 indicate severe pancreatitis.

BISAP score[2]
Blood Urea Nitrogen >25mg/dl
Impaired mental status Systemic inflammatory response syndrome (SIRS)
Age >60 years Pleural effusion present or absence
BISAP score >3 denotes acute pancreatitis

Modified CT Severity Index[3] = CT grade + percentage necrosis + extrapancreatic complications (points)

Scores are generated by estimating pancreatic inflammation and necrosis to give a score out of 10.

Pancreatic inflammation
- 0: normal pancreas
- 2: intrinsic pancreatic abnormalities with or without inflammatory changes in peripancreatic fat
- 4: pancreatic or peripancreatic fluid collection or peripancreatic fat necrosis

Pancreatic necrosis
- 0: none
- 2: 30% or less
- 4: more than 30%

Extrapancreatic complications
- 2: one or more of pleural effusion, ascites, vascular complications, parenchymal complications and/or gastrointestinal involvement Total score

Total points are given out of 10 to determine the grade of pancreatitis and aid treatment
Mild : (0 – 2)
Moderate: (4 – 6)
Severe : (8 – 10)

Data analysis:
The data analyzed in terms of:
a. Occurrence rates of acute pancreatitis due to various causes.
b. Comparision of various clinical and radiological criteria for the assessment of the severity of disease.
c. Occurence of various complications in the acute pancreatitis and its outcome.

Data was analyzed using the statistical Package for the social Sciences version 19.0 software for windows(SPSS). Results with normal distribution and non-Gaussian distribution was expressed as mean ± standard deviation (SD). Results were considered statistically significant when the two-tailed p value was less than 0.05.

RESULT
Out of these hundred patient, 62 were males and 38 were female (table 1).Most patients were present with epigastric pain that was present in about 99% of cases.We concluded that APACHE II had sensitivity of 98.59%, BISAP had sensitivity of 98.27% and modified CTSI had sensitivity of 96.15% in predicting the severity of acute pancreatitis (table 3) . APACHE II had predictive value 75%, BISAP had predictive value 61% and modified CTSI had predictive value 80% (table 3,4,5). We concluded that pleural effusion is the most common complication of acute pancreatitis and it was found in 50% of cases (table 2). Other complication found to be renal failure (27%), hypocalcemia (32%) (table 2). Acute peri pancreatic fluid collection (APFC) (33%) is common local complication found in our study. Other complication were Acute necrotic collection (ANC) (22%), Pseudocyst (4%) and Walled off necrosis (WON) (4%) (table 2).

DISCUSSION
Present study was conducted to determine the etiological prevalence, comparision of various diagnostic criteria for severity of acute pancreatitis and associated complications in relation to morbidity and mortality i.e. survival and hospital stay of the patients.

In this study, we have observed that Gall stone was etiological factor in 49% of the cases alcohol was in 36 % of cases.The remaining cause were due to Trauma (2%),Carcinoma (1%) ,hyper TG (1%) and post ERCP (1%). The etiology were idiopathic in 9% of cases. Our study concluded that Gall stone remain most common cause of acute pancreatitis followed by alcohol intake. In our study, both male and female patients were included and difference in distribution of patients according to gender showed insignificant difference. Out of all the females, majority had gall stone as the etiological factor responsible for their disease in contrast to male population which showed alcohol followed by gall stone as their etiology. It show extremely low prevalence of alcoholism in female population in our area , while gall stone were found in both genders. This made gallstones comprise the etiology in 49% of cases while alcohol was found in 36% of patients only (exclusively males), which correlate with the study by Vonlaufen et al[1], Gullo at al[2] and Vidarsdottir H[3]. In our study, it was found that although all the 3 indicators namely APACHE II, modified CTSI and BISAP score are sensitive enough to detect severity of pancreatitis, modified CTSI has the highest positive predictive value amongst all. The reason behind our study may be because of demonstration of direct CT evidence of pancreatic inflammation in case of CTSI vs relying on the indirect evidence for assessing severity of pancreatitis in APACHE II and BISAP scores which correlate with study by Meyrignac et al[4]. In our study it has found that pleural effusion is most common complication that is associated with acute pancreatitis . It was seen in about 50 % of the patients and mostly found on the left side, and ocassionaly on the right side. Next common complication that encountered in our study is hypocalcemia (32%). It asually asymptomatic and found on blood investigations. sometimes it may become symptomatic with physical sign of hypocalcemia as found about 3 cases in our study. Acute peripancreatic fluid collection (APFC) (33%) is common local complication found in our study. Other complication were Acute necrotic collection (ANC) (22%), Pseudocyst (4%) and Walled off necrosis (WON) (4%) which correlate with study by MG Raghu at al[5].

CONCLUSIONS :
Acute pancreatitis is the common differential diagnosis in patients presenting with acute abdomen in casualty. Most common etiological factor is gall stone disease followed by alcohol.Opiods may play role as etiological factors as It can cause spasm of sphincter oddi that leads to back reflux of pancreatic juice in to the pancrease. For the severity of acute pancreatitis, The BISAP score is the most reliable clinical score to predict the severity, organ failure and mortality because it has less component and can be measured at any time but modified CTSI is the most reliable score overall, because it gives direct measurement of pancreatic inflammation and local complication.

12. Recommendations:
In the absence of gallstones and significant history of alcohol use, a serum triglyceride should be obtained and considered the etiology if >1,000 mg/dl. Patients with opioid addiction without gallstone and significant history of alcohol use ,opiod may be considerared as causative agent for acute pancreatitis. For the severity of acute pancreatitis, The BISAP score is the most reliable clinical score to predict the severity, organ failure and mortality because it has less component and can be measured at any time .Modified CTSI is the most reliable score overall, because it gives direct measurement of pancreatic inflammation and local complication. In stable patients with infected necrosis, surgical, radiologic, or endoscopic drainage should be delayed to develop a fibrous wall around the necrosis . More conservative approach should be consideraded in the management of complications associated with acute pancreatitis. In recent times, there has been changing trend of managing the patients like ischemic heart disease and peptic ulcer disease towards more conservative approach. Like as patients of acute pancreatitis should be treated by surgeon as they can identify impending complications of acute pancreatitis better and take early decision of managing complications of acute pancreatitis.

Table 1 Distribution of Cases according to Age group in relation to sex

Age Group (years)	Sex				Total	
	Female		Male			
	No.	%	No.	%	No.	%
<30	8	21.1	10	16.1	18	18.0
31-40	7	18.4	16	25.8	23	23.0
41-50	8	21.1	11	17.7	19	19.0
51-60	11	28.9	16	25.8	27	27.0
>60	4	10.5	9	14.5	13	13.0
Total	38	100	62	100	100	100
Mean	45.50		46.35			
SD	14.02		13.95			
T	0.297					
P	0.767					

Table 2: Distribution of cases according to complications in relation to sex

Complications		Sex				Total		x^2	P
		Female		Male					
		No.	%	No.	%	No.	%		
Renal Failure	Present	5	13.2	22	35.5	27	27.0	5.958	0.015
	Absent	33	86.8	40	64.5	73	73.0		
Pleural Effusion	Present	16	42.1	34	54.8	50	50.0	1.528	0.216
	Absent	22	57.9	28	45.2	50	50.0		
Hypocalcemia	Present	8	21.1	24	38.7	32	32.0	3.376	0.066
	Absent	30	78.9	38	61.3	68	68.0		
APFC	Present	12	31.6	21	33.9	33	33.0	0.056	0.813
	Absent	26	68.4	41	66.1	67	67.0		
Pseudocyst	Present	1	2.6	3	4.8	4	4.0	0.299	0.585
	Absent	37	97.4	59	95.2	96	96.0		
ANC	Present	6	15.8	16	25.8	22	22.0	1.378	0.241
	Absent	32	84.2	46	74.2	78	78.0		
WON	Present	1	2.6	3	4.8	4	4.0	0.299	0.585
	Absent	37	97.4	59	95.2	96	96.0		

Table 3: Distribution of cases according to Apache II Score in relation to outcome

Apache II Score	Outcome				Total	
	Cured		Expired			
	No.	%	No.	%	No.	%
< 8	70	75.3	1	14.3	71	71.0
>8	23	24.7	6	85.7	29	29.0
Total	93	100	7	100	100	100
Mean	5.78		12.14			
SD	3.49		4.56			
T	4.548					
P	<0.001					
Sensitivity	98.59					
Specificity	20.68					
PPV	75.26					
NPV	85.71					

Table 4 Distribution of cases according to CT Severity Index in relation to Outcome

CT Severity	Outcome				Total	
	Cured		Expired			
	No.	%	No.	%	No.	%
< 6	23	24.7	0	-	23	23.0
6-8	52	55.9	3	42.9	55	55.0
>8	18	19.4	4	57.1	22	220
Total	93	100	7	100	100	100
Mean	4.53		7.42			
SD	2.36		2.22			
T	3.134					
P	0.002					
Sensitivity	96.15					
Specificity	18.18					
PPV	80.64					
NPV	57.14					

Table 5 Distribution of cases according to BISAP Score in relation to sex

BISAP Score	Outcome				Total	
	Cured		Expired			
	No.	%	No.	%	No.	%
0-2 (Low)	57	61.3	1	14.3	58	58.0
3-5 (High)	36	38.7	6	85.7	42	42.0
Total	93	100	7	100	100	100
Mean	2.34		3.85			
SD	1.05		1.06			
T	3.646					
P	<0.001					
Sensitivity	98.27					
Specificity	14.28					
PPV	61.29					
NPV	85.71					

REFERENCE

1. Cruz-Santamaría DM, Taxonera C, Giner M. Update on pathogenesis and clinical management of acute pancreatitis. World J Gastrointest Pathophysiol 2012; 3(3): 60-70
2. Banks PA, Bollen TL, Dervenis C, Gooszen HG, Johnson CD, Sarr MG, Tsiotos GG, Vege SS. Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus. Gut. 2013 Jan 1;62(1):102-11.
3. Lowenfels AB, Maisonneuve P, Sullivan T. The changing character of acute pancreatitis; epidermiology, etiology and prognosis. Curr Gastroentrol Rep 2009 ;11(2):97-103.
4. Wu BU, Johannes RS, Sun X, Tabak Y, Conwell DL, Banks PA. The early prediction of mortality in acute pancreatitis: A Large Population Study .Gut.2008;57(12):1698-1703.
5. Delrue LJ,Waele JJ,Duyck PO.Acute Pancreatitis ;Radiologic scores in predicting severity and outcome.Abdomen Imaging .2010;35(3):349-61.Vonlaufen A, Wilson JS, Apte MV. Molecular mechanisms of pancreatitis: current opinion. Journal of gastroenterology and hepatology. 2008 Sep 1;23(9):1339-48.
6. Gullo L, Migliori M, Oláh A, Farkas G, Levy P, Arvanitakis C, Lankisch P, Beger H. Acute pancreatitis in five European countries: etiology and mortality. Pancreas. 2002 Apr 1;24(3):223-7.
7. Vidarsdottir H, Möller PH, Vidarsdottir H, Thorarinsdottir H, Björnsson ES. Acute pancreatitis: a prospective study on incidence, etiology, and outcome. European journal of gastroenterology & hepatology. 2013 Sep 1;25(9):1068-75.
8. Meyrignac O, Lagarde S, Bournet B, Mokrane FZ, Buscail L, Rousseau H, Otal P. Acute pancreatitis: extrapancreatic necrosis volume as early predictor of severity. Radiology. 2015 Feb 2;276(1):119-28.
9. Raghu MG, Wig JD, Kochhar R, Gupta D, Gupta R, Yadav TD, Agarwal R, Kudari AK, Doley RP, Javed A. Lung complications in acute pancreatitis. JOP. 2007 Mar 10;8(2):177-85.