



E-ISSN: 2616-3470

P-ISSN: 2616-3462

© Surgery Science

www.surgeryscience.com

2020; 4(3): 77-81

Received: 07-05-2020

Accepted: 09-06-2020

Dr. Jadhav SC

Department of General Surgery,
Dr. VMGMC, Civil Hospital
Campus, Solapur, Maharashtra,
India

Dr. Jaykar RD

Department of General Surgery,
Dr. VMGMC, Civil Hospital
Campus, Solapur, Maharashtra,
India

Dr. Wasekar SM

Department of General Surgery,
Dr. VMGMC, Civil Hospital
Campus, Solapur, Maharashtra,
India

A study of the clinical profile of acute pancreatitis and its correlation with severity indices

Dr. Jadhav SC, Dr. Jaykar RD and Dr. Wasekar SM

DOI: <https://doi.org/10.33545/surgery.2020.v4.i3b.472>

Abstract

Background: Acute pancreatitis is an inflammatory process with possible peripancreatic tissue and multi organ involvement inducing multi organ dysfunction syndrome (MODS) with an increased mortality rate. Acute pancreatitis may vary in severity, from mild self-limiting pancreatic inflammation to pancreatic necrosis with life-threatening sequelae. Severity of acute pancreatitis is linked to the presence of systemic organ dysfunctions and/or necrotizing pancreatitis.

Methods: This is prospective study of 100 patients diagnosed as having acute pancreatitis and after obtaining informed written consent of patient. Patients inclusive are all the patients with diagnosis of acute pancreatitis (consecutive 100 patients) admitted in tertiary care hospital. Patients with chronic pancreatitis and pancreatic malignancy and Patient not willing to participate in the study excluded from the study.

Results and Conclusions: In present study it is concluded that Gall stone is the commonest cause, epigastric pain is the commonest mode of presentation, while Pleural effusion is most common complication of acute pancreatitis. Two or more severity indices should be used for determining severity, prediction of early complications and mortality associated with acute pancreatitis

Keywords: acute pancreatitis, severity scores, clinical profile

Introduction

Acute pancreatitis is an inflammatory process with possible peripancreatic tissue and multi organ involvement inducing multi organ dysfunction syndrome (MODS) with an increased mortality rate. multi-factorial scoring systems, which are complex and difficult to use in clinical bases, have been shown to perform with high negative predictive value but only moderate overall sensitivity ^[1]. A new prognostic scoring system, the Bedside Index for Severity in Acute Pancreatitis (BISAP), has recently been proposed as an accurate and simple method for early identification of patients at risk of in-hospital mortality ^[2]. Several classification systems have been presented to assess the severity of acute pancreatitis. Presence of SIRS (Systemic inflammatory response syndrome), scores such as the Ranson score, Glasgow score, and Acute Physiology and Chronic Health Evaluation (APACHE) are practical for assessing the severity of the disease but are not sufficiently well validated for predicting mortality. Early organ dysfunction predicts disease severity and patients require early intensive care treatment

The Present study entitled as a study of the clinical profile of Acute Pancreatitis and its correlation with severity indices for assessment and comparison of the early predictability of various parameters most widely used in acute pancreatitis such as multifactorial scoring systems (Ranson, APACHE- II , and BISAP), CTSI in a tertiary care center.

Materials and Methods

Present study was carried out in the department of General Surgery. Dr VMGMC, SCSMSR General hospital, Solapur. In the present prospective study, 100 patients diagnosed as having acute pancreatitis and after obtaining informed written consent of patient. Patients inclusive are all the patients with diagnosis of acute pancreatitis (consecutive 100 patients) admitted in tertiary care hospital. Patients with chronic pancreatitis and pancreatic malignancy and Patient not willing to participate in the study excluded from the study. On admission detailed clinical history regarding time of appearance and duration of symptoms were noted. Thorough clinical examination was done. General condition of patient was assessed and noted down. In diagnosis main stress was given on detailed history obtained from patients and following points were

Corresponding Author:

Dr. Jaykar RD

Department of General Surgery,
Dr. VMGMC, Civil Hospital
Campus, Solapur, Maharashtra,
India

noted. The clinical diagnosis of acute pancreatitis requires the presence of at least two out of three criteria: Combination of abdominal pain that is consistent with pancreatic origin, Presence of elevated amylase or lipase or both to at least three times the upper limit of normal; Radiological imaging with findings consistent with acute pancreatitis. History and physical examination findings are variable: there may be epigastric to right upper quadrant pain, left upper quadrant pain, back pain, nausea, vomiting, jaundice, tachycardia, guarding, or even signs of shock. In children under the age of 3, pain may present as increased irritability, and abdominal distension and fever were more common than in older children. Investigations are done in every case to rule-out other associated anomalies and to confirm clinical diagnosis and classify AP according to severity.

1. Laboratory investigations

Hemoglobin level, Bleeding time and clotting time, Serum electrolyte, Liver function tests, Kidney function tests, Serum amylase, Serum lipase, Proteins, CRP

2. Radiological investigations

Chest X-Ray PA view, X ray Abdomen AP View, USG (Abdomen and Pelvis), USG (Thorax), CECT (Abdomen and pelvis), MRI Abdomen, whenever required.

After the final diagnosis was made, Patients were classified into mild, moderate and severe acute pancreatitis based on Ranson's score, APACHE II scoring and CT severity index (CTSI). Complete hemogram, liver function tests, renal function tests,

serum amylase, serum lipase, random blood sugar, lipid profile, serum calcium and C-Reactive protein were done for all the patients. CECT abdomen was done when indicated and CT severity index was calculated. Patients with moderate and severe pancreatitis were managed in Intensive Care Unit. Patients with mild pancreatitis were managed in the ward. Step up approach and surgery was done in patients who did not improve on intensive medical management.

Statistical analysis: All the statistical analysis were carried out by SPSS (Statistical Package for Social Sciences) version 16. Microsoft word and Excel have been used to generate graphs, table etc. Statistical method used was Z test for difference between two proportions. $p < 0.05$ will be considered statistically significant.

Results and Discussions

Age-wise distribution of cases of AP

Sr. No.	Age group	No of patients	Percentage
1	< 10 years	0	0%
2	10 - 20 years	3	3%
3	21-30 years	38	38%
4	31- 40 years	24	24%
5	41-50 years	17	17%
6	51-60 years	10	10%
7	>60 years	8	8%
	Total	100	100%

Table 1: Comparison of Age group of patient in various other studies

Sr. No	Studies	Age group of patient (In Years)	Percentages of patients
1	Present study 2019 (n=100)	21 - 30	38%
2	Ekka NM <i>et al.</i> 2018 (n=95) [3]	31 - 40	40%
3	Chand P <i>et al.</i> 2017 (n= 30) [4]	26 - 40	40%
4	Suthar K <i>et al.</i> 2018 (n=250) [5]	31 - 40	40%
5	Vengadakrishnan K <i>et al.</i> 2015 (n= 110) [6]	21 - 40	52%
6	Chauhan Y <i>et al.</i> 2017 (n= 50) [7]	41 - 60	44%
7	Ahmed KU <i>et al.</i> 2016 (n = 50) [8]	21 - 40	54%

In present study the most common age group of patient presented is 21 to 30 years (38%). Similar type of results also noted in other studies conducted in india and at international level, in 2018 study by Ekka NM *et al.* on 95 patients indicated 40% of patients from age group of 31 to 40 years, Chand P *et al.* in 2017 (n=30) had 40% of patients in age group of 26 to 40 years, study by Suthar K *et al.* in 2018 on 250 patients had 31 to 40 years most common age group. In similar study by Vengadakrishnan K *et al.* in 2015 on 110 patients had 21 to 40 years as most common age group in 52%. In study by Chauhan Y *et al.* on 50 patients showed 44% of patients were in age group of 41 to 60 years. In study by Ahmed KU *et al.* 2016 had 54% of patients in age group of 21 to 40 years.

In present study males are more commonly affected by AP than females. As sex ration on present study is 3.34:1. Several studies show similar results. In a study by Chauhan Y *et al.* 2017 on 50 patients it was found that 29 were male and 21 were females (1.38:1). In a similar study by Vengadakrishnan K *et al.* in 2015

(n=110) male to female ratio was 1.9:1. In study conducted by In Mallick B. *et al.* in 2018 on 724 patients sex ratio was 1.9:1. In study conducted by Kateb A. *et al.* 2017 (n=220) sex ratio was 1.7:1. In study conducted by Ekka NM *et al.* 2018 (n=95) sex ratio was 5.78:1, similarly in study by Chand P *et al.* in 2017 on 30 patients sex ratio was 2.74:1.

Table 2: Comparison of sex ratio of patient in AP in various other studies

Sr. No.	Studies	Sex Ratio
1	Present study 2019 (n=100)	3.34:1
2	Chauhan Y <i>et al.</i> 2017 (n= 50) [6]	1.38:1
3	Vengadakrishnan K <i>et al.</i> 2015 (n= 110) [6]	3:1
4	Mallick B. <i>et al.</i> 2018 (n=724) [9]	1.9:1
5	Kateb AY <i>et al.</i> 2017 (n=220) [7]	1.7:1
6	Ekka NM <i>et al.</i> 2018 (n=95) [3]	5.78:1
7	Chand P <i>et al.</i> 2017 (n= 30) [4]	2.74:1

Table 3: Comparison of Clinical present of patient in AP in various other studies

Sr. No.	Signs/Symptom	Studies				
		Present study 2019 (n=100)	Ekka NM <i>et al.</i> 2018 (n=95) [3]	Ahmed KU <i>et al.</i> 2016 (n = 50) [8]	Chauhan Y <i>et al.</i> 2017 (n= 50) [7]	Bhimwal RK <i>et al.</i> 2017 (n=50) [10]
1	Epigastric pain	97%	100%	94%	100%	97.5%
2	Nausea and vomiting	94%	83%	88%	42%	92.5%

3	Pain radiating to back	65%	---	--	---	60%
4	Fever	40%	43.16%	12%	38%	25%
5	Jaundice	22%	21.06%	10%	6%	---
6	Ascites/ abdominal distention	42%	---	18%	40%	---
7	Abdominal tenderness	65%	---	66%	---	60%
8	tachycardia	38%	---	---	---	20%

In this study patients with AP presented most commonly with epigastric pain in 97%. Similar type of results were seen in other studies too.

Table 4: Comparison of Etiology of patient in AP in various other studies

Sr. No.	Etiology	Studies					
		Present study 2019 (n=100)	Chauhan Y <i>et al.</i> 2017 (n= 50) [7]	Bhimwal RK <i>et al.</i> 2017 (n=50) [10]	Ekka NM <i>et al.</i> 2018 (n=95) [3]	Chand P <i>et al.</i> 2017 (n= 30) [4]	Ahmed KU <i>et al.</i> 2016 (n = 50) [8]
1	Gall stones	41%	32%	50%	23.16%	30%	18%
2	Alcohol	38%	50%	37.5%	57.84%	53.33%	10%
3	Idiopathic	12%	10%	2%	5.26%	10%	60%
4. d	Trauma	8%	1%	2.5%	12.63%	6.67%	2%
5	hypertriglyceridemia	2%	6%	---	---	---	2%

In this study most common cause of AP noted as gall stones in 41 patients (41%) followed by alcohol consumption in 38% similar results noted in studies by Bhimwal RK *et al.* 2017 (n=50) in which gall stones contribute 50% of patients and alcohol consumption 37.5% as cause for AP along with these

two causative factors trauma and hypertriglyceridemia contribute 2.5% and in this study 8% and 2% respectively. 12% patients of this study had idiopathic AP, study by Chauhan Y *et al.* 2017 also shows idiopathic AP in 10% of patients.

Table 5: Comparison of blood investigations in AP with other Studies

Sr. No.	Blood Investigations	Present study 2019 (n=100)	Rao BS <i>et al.</i> 2014(n=54) [11]	Chauhan Y <i>et al.</i> 2017 (n= 50) [7]	Vengadakrishnan K <i>et al.</i> 2015 (n= 110) [6]	Negi MJ <i>et al.</i> 2017 (n=123) [12]	Deherkar JA 2019 (n=100) [13]	Ahmed KU <i>et al.</i> 2016 (n = 50) [8]
1	Sr Amylase	88%	47%	95.2%	91%	85%	--	--
2	Sr Lipase	96%	82%	100%	91%	94%	--	--
3	Leukocytosis	68%	60%	57%	--	67.84%	--	30%
4	CRP	73%	--	57%	--	21.4%	76%	--
5	Hypertriglyceridemia	2%	--	6%	--	4.8%	--	2%
6	Altered renal function	6%	25%	24%	72%	--	4.9%	--
7	Altered liver function	37%	16%	13.4%	97%	---	--	6%

From above table it is evident that serum amylase and lipase are on higher side in present study and similar results noted in other study too. Study by Chauhan Y *et al.* in 2017 on 50 patients noted raised Sr. amylase and lipase level in 95.2% and 100% respectively. Vengadakrishnan K *et al.* in 2015 also showed raised Sr. amylase and lipase in 91% and 91% respectively and Negi MJ *et al.* also showed similar results of 85% and 94 % patients with raised Sr. amylase and Sr. lipase respectively. In present study 68% patients noted with leukocytosis and studies by Rao BS *et al.*, Chauhan Y *et al.* in 2017 and Negi MJ *et al.* showed leukocytosis in 60%, 57% and 67.84% of patients respectively. In present study Hypertriglyceridemia is in 2% of patients and study by Chauhan Y *et al.* notice 6%, Negi MJ *et al.* showed 4.8% and Ahmed KU *et al.* in 2016 showed 2% of patients with Hypertriglyceridemia. In present study altered liver and renal function seen in 37% and 6 % and study by Rao BS *et al.* 2014 showed it in 16% and 25% of patients respectively. And similar results are also noted in other studies in above table.

In present study (n=100) complications of AP, pleural effusion seen in 30% of patients with AP, in present study shock in 14% of patients and MODS seen in 7% of patients, ARDS in 11% of patients and pseudo cyst of pancreas in 14% of patients shows similar results as in Vengadakrishnan K *et al.* 2015 (n= 110) [6] in which 13.6% of patients with pleural effusion, in study by Deherkar JA 2019 (n=100) [13], 22% of patients were with pleural effusion and study by Bhimwal RK *et al.* 2017 (n=50) [10]

reported 7.5 % of patients with pleural effusion. According to CTSI score patients in this study classified into mild, moderate and severe according to CTSI score, 22 patients fall into mild CTSI score (0 to 3), 52 patients in moderate (4 to 6) and 20 patients in severe category(7 to 10). In study by Chand P *et al.* 2017 (n= 30) 10% of patients belongs to mild CTSI, 60% in moderate CTSI and 30% in severe CTSI. In study by Suthar K *et al.* 2018 (n=250) [5] mild, moderate and severe CTSI seen in 8%, 72% and 20% respectively. In study by Chauhan Y *et al.* 2017 (n= 50) [7] shows 22% of patients in mild CTSI, 54% patients in moderate CTSI and 24% of patients fall in severe CTSI.

Ranson score

In this study (n=100) according to ranson score severity of AP, 3 patients (3%) with ranson score less than 3 with complications of AP and 53 patients with complications and Ranson score more than 3. 24 patients are with ranson score more than 3 and they are without complications while 20 patients are without complications with score less than 3.

Table 6: Ranson Score

	Sensitivity	Specificity	PPV	NPV
Present study	94.64%	45.45%	68.83%	86.96%
Kiat TT <i>et al.</i> [14]	97.2%	52.8%	21.6%	98.1%
Ekka NM <i>et al.</i> [3]	56.52%	86.11%	56.52%	86.11%

In present study sensitivity of ranson score is 94.64% which is statistically significant with both studies conducted by Kiat TT *et al.* [14] and Ekka NM *et al.* [3] as z value of 0.57 and p value more than 0.05 and values are comparable.

APACHE II score

There are 23 patients (23%) with APACHE II score more than 8 and 34 patients with score less than 8 with complications of AP. While 21 patients (21%) with APACHE score more than 8 without complications and 22 patients with score less than 8 are without complications of AP.

Table 7: APACHE Score

	Sensitivity	Specificity	PPV	NPV
Present study	40.35%	51.16%	52.27%	39.29%
Ekka NM <i>et al.</i> [3]	52.17%	88.89%	60%	85%
Suvarna R <i>et al.</i> [15]	75%	65%	55%	78%

In present study sensitivity of APACHE II test is 40.35%, specificity of 51.16%, PPV of 52.27% and NPV of 39.29% which is statistically significant with studies conducted by Suvarna R *et al.* [15] and Ekka NM *et al.* [3] as z value of 1.14 and p value more than 0.05 and results were comparable.

Glasgow score

20% of patients with Glasgow Score less than 3 and without complications and 2 patients (2%) are with complications in Glasgow Score less than 3. There are 23 patients (23%) without complications who has Glasgow Score of more than 3 and 55 patients (55%) has Glasgow Score of more than 3 with complications. Hence sensitivity of Glasgow score in our study is 96.49% and specificity is 46.51%, PPV is 70.51%, NPV 90.91% and in Chand P *et al.* 2017 (n= 30) [4] sensitivity of 76.8, specificity of 69.2 while PPV & NPV are 25.8 & 95.5% respectively. In Suvarna R *et al.* [15] study sensitivity of 75, specificity of 60 while PPV & NPV are 53 & 78% respectively. In study by Kuo DC *et al.* [16]. Glasgow score has sensitivity and specificity of 73.5 and 71.1 respectively while PPV and NPV are 49% and 87.7 respectively. Which is statistically insignificant as z value of 3.47 and p value more than 0.05 and results were comparable.

BISAP Score

21 patients (21%) with BISAP Score less than 2 without complications and 2 patients (2%) are with complications in BISAP Score less than 2. There are 22 patients (22%) without complications who has BISAP Score of more than 3 and 55 patients (55%) has BISAP Score of more than 3 with complications. Sensitivity of BISAP score in our study is 96.49% and specificity is 48.84%, PPV is 71.43%, NPV 91.30%, while in study by Cho JH *et al.* in 2012 on 161 patients [17] sensitivity of 61.9%, specificity of 72.1% while PPV & NPV are 25% & 92.7% respectively. Ekka NM *et al.* 2018 (n=95) [3] study sensitivity of 52.17%, specificity of 90.28% while PPV & NPV are 63.16% & 85.53% respectively. As compare to both studies our study is statistically significant as x value of 1.79 and p value of more than 0.05 and values are comparable.

In present study (n=100) outcomes of AP, there are 76 patients recovered from AP (76%) and 24 patients succumbed to death (24%), similar results are also seen in other studies. Rao BS *et al.* 2014 (n=54) [11] shows 87.3% of patients recovered and 12.7% of patients were death, Chauhan Y *et al.* 2017 (n= 50) [7] shows recover rate of 98% and 2% mortality and study by Ahmed K U *et al.* 2016 (n=50) [8] shows recovery in 94.3% of

patients and 5.69% of death rate.

Conclusion

The present study was aimed to assess the clinical profile of acute pancreatitis and efficacy of various severity indices in predicting the outcome of patients. Total 100 patients of AP included in this study. 23 were females and 77 were male patients. Majority patients (36%) presented in age group of 21 to 30 years. In our study the most common causes of AP observed were, gall stones, alcohol, idiopathic, trauma and hypertriglyceridemia out of which gall stone was the commonest cause (41%). Epigastric pain, nausea, vomiting, pain radiating to back, fever, jaundice and abdominal distention were the commonest signs and symptoms of presentation out of which epigastric pain (97%) is most common presenting complain in AP present study on 100 patients. Pleural effusion, Pseudocyst of pancreas, Shock, ARDS, MODS and death were the commonest complications observed in present study. Out of which pleural effusion (30%) was the commonest complication observed in our study. BISAP and Glasgow score found to be with highest sensitivity of 96.49% each, followed by Ranson score with sensitivity of 94.64% and APACHE II with sensitivity of 40.35% in predicting severity of AP. Patients with higher severity indices had higher mortality rate during study evolution. The mortality rate was 24%.

Hence it is concluded that Gall stone is the commonest cause, epigastric pain is the commonest mode of presentation, while Pleural effusion is most common complication of acute pancreatitis. Two or more severity indices should be used for determining severity, prediction of early complications and mortality associated with acute pancreatitis.

References

- Papachristou GI, Muddana V, Yadav D, O'Connell M, Sanders MK, Slivka A *et al.* Comparison of BISAP, Ranson's, APACHE-II, and CTSI scores in predicting organ failure, complications, and mortality in acute pancreatitis. *The American journal of gastroenterology.* 2010; 105(2):435.
- Neoptolemos JP, Kemppainen EA, Mayer JM, Fitzpatrick JM, Raraty MG, Slavin J *et al.* Early prediction of severity in acute pancreatitis by urinary trypsinogen activation peptide: a multicentre study. *The Lancet.* 2000; 355(9219):1955-60.
- Chand P, Singh R, Singh DP, Rani N. Evaluation of the Outcome of Acute Pancreatitis by Ranson's Criteria and Modified CT Severity Index. *Renal failure,* 2, 4-25.
- Suthar K, Solanki D, Rathod A. A Study of Clinical Profile of Acute Pancreatitis In AMC MET Medical College A Retrospective Study. *National Journal of Integrated Research in Medicine,* 2018, 9(2).
- Krishnan K, Koushik AK. A study of the clinical profile of acute pancreatitis and its correlation with severity indices. *International journal of health sciences.* 2015; 9(4):410.
- Chauhan Y, Jindal N, Verma RK, Tyagi PK, Rana M, Singh S *et al.* A clinical profile and outcome of patients with acute pancreatitis: A prospective study in North India. *Archives of International Surgery.* 2018; 8(3):132.
- Kateb AY. Acute Pancreatitis among patients in Saudi Arabia. *EC Microbiology,* 2-10.
- Mallick B, Shrama DJ, Siddappa P, Dhaka N, Malik S, Sinha SK *et al.* Differences between the outcome of recurrent acute pancreatitis and acute pancreatitis. *JGH Open.* 2018; 2(4):134-8.

9. Bhimwal RK, Makwana M, Panwar RR, Lal K. A prospective study of clinical, biochemical and radiological features in pancreatitis. *International Journal of Advances in Medicine*. 2017; 4(5):1386.
10. Chatila AT, Bilal M, Guturu P. Evaluation and management of acute pancreatitis. *World journal of clinical cases*. 2019; 7(9):1006.
11. Rao BS, SreeVane M, Chandra VS. Etiology, clinical profile, severity and outcome of acute pancreatitis in relation to bed side index for severity of acute pancreatitis BISAP and CT severity index [CTSII] scores. *International Journal of Medical Research & Health Sciences*. 2014; 3(4):922-8.
12. Negi MJ, Sharma B, Sharma R, Jhobta A, Bodh V, Ranjan A *et al*. Clinical Profile and Outcome of Acute Pancreatitis: A Hospital-Based Prospective Observational Study in Sub Himalayan State. *Journal of the Association of Physicians of India*, 2018, 66.
13. Deherkar JA, Pandey A, Deshmukh S. C-reactive protein levels in acute pancreatitis and its clinical significance. *International Surgery Journal*. 2019; 6(9):3328-34.
14. Kiat TT, Gunasekaran SK, Junnarkar SP, Low JK, Woon W, Shelat VG *et al*. Are traditional scoring systems for severity stratification of acute pancreatitis sufficient? *Annals of hepato-biliary-pancreatic surgery*. 2018; 22(2):105-15.
15. Suvarna R, Pallipady A, Bhandary N, Hanumanthappa H. The clinical prognostic indicators of acute pancreatitis by APACHE II scoring. *Journal of Clinical and Diagnostic Research*. 2011; 5(3):459-63.
16. Kuo DC, Rider AC, Estrada P, Kim D, Pillow MT. Acute pancreatitis: what's the score? *The Journal of emergency medicine*. 2015; 48(6):762-70.
17. Cho JH, Kim TN, Chung HH, Kim KH. Comparison of scoring systems in predicting the severity of acute pancreatitis. *World Journal of Gastroenterology: WJG*. 2015; 21(8):2387.