

Original Research Article

DOI: <http://dx.doi.org/10.18203/2349-2902.isj20185024>

Comprehensive analysis of etiology, prognosis and clinical outcome of acute pancreatitis in a tertiary care center

Vinodh Duraisami, Gunasekaran Balraj*, Vinyak Rengan

Department of General Surgery, Madras Medical College, Chennai, Tamil Nadu, India

Received: 03 October 2018

Accepted: 30 October 2018

***Correspondence:**

Dr. Gunasekaran Balraj,

E-mail: deardrguna@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Acute pancreatitis can be classified as mild and severe. Mild pancreatitis is explained by interstitial edema of the gland and it is usually a self-limiting form. Whereas in severe pancreatitis, there is pancreatic necrosis, severe systemic inflammatory response and multi-organ failure which may lead to mortality. To identify the most common etiological agent of acute pancreatitis in our institution.

Methods: Patients diagnosed with acute pancreatitis in Institute of General Surgery, Rajiv Gandhi Govt. General Hospital. 50 of them are to be selected on the basis of nonprobability (purposive) sampling method. Data pertinent to the scoring systems will be recorded within 24 h of admission to the hospital.

Results: 86% of patients had BISAP score less than 3 (mild) and 14% of patients had more or more than 3 (severe). The cases with mild, moderate and severe CTSI score were 76%, 20% and 4% respectively. Only two cases with BISAP score 3 or more had CTSI >6.

Conclusions: Alcohol is the most common etiological factor for acute pancreatitis in this regional population. The morbidity rate is 26% and the mortality rate in patients with severe pancreatitis was 4%. The BISAP score is more accurate in predicting disease severity and significantly than CTSI in this study.

Keywords: Acute pancreatitis, Alcoholism, BISAP score, CTSI score

INTRODUCTION

Acute pancreatitis is recognized as a difficult area both for the patients and surgeons since the impending threat to the patient if not addressed at the time. Several causes have been incriminated for acute pancreatitis, among which alcohol and gallstone disease remain the leading causes.¹ Acute pancreatitis can be classified as mild and severe.² Mild pancreatitis is explained by interstitial edema of the gland and it is usually a self-limiting form. Whereas in severe pancreatitis, there is pancreatic necrosis, severe systemic inflammatory response and multi-organ failure which may lead to the mortality.³ Hence it is crucial to identify risk stratification tools for the disease, which aids in the management. Several causes have been incriminated for acute pancreatitis,

among which alcohol and gallstone disease remain the leading causes.⁴ Standard text books describe the gallstone disease as the most common cause. Various scoring systems had been developed to define the severity and prognosis of acute pancreatitis in the past. The earliest of which was developed by Ranson in 1974.⁵ It predicts the severity of the disease, which is based on multiple (11) the parameters that are obtained at admission and after 48 hours. Ranson's score has low positive predictive value (50%) and high negative predictive value (90%). Hence its main use is to rule out acute pancreatitis and also predicts a severe attack.⁶ Bedside index for severity in acute pancreatitis (BISAP), the scoring system picks patients with high morbidity and risk of mortality before organ failure sets in.⁷

METHODS

This prospective and retrospective study was conducted during the period of October 2016-September 2017. In the department of General Surgery, Rajiv Gandhi Govt. General Hospital The study was conducted after obtaining the Institutional Ethical Committee approval.

Inclusion criteria

Patients with a clinical picture consistent with the diagnosis of acute pancreatitis, along with radiological evidence of inflamed pancreas will be considered to have acute pancreatitis. The first episode of acute pancreatitis. Age >18 years and Age <70 years.

Exclusion criteria

Proven cases of chronic pancreatitis, Acute pancreatitis patients with organ failure at or within 24hrs of presentation, pregnancy, chronic kidney disease. Traumatic pancreatitis with a head injury. Mental retardation. 50 patients attending the general surgery department with clinical features of pancreatitis are evaluated clinically and subjected to laboratory and radiological investigations as per the designed proforma. Data pertinent to the scoring systems will be recorded within 24hrs of admission to the hospital. Once the diagnosis is established the patient disease severity will be assessed by the BISAP scoring system.

Statistical analysis

For each of 50 patients included in the study, BISAP scores and modified CTSI scores calculated. The collected data were analyzed with IBM. SPSS statistics software 23.0 Version. Chi-square test. To describe about the data descriptive statistics frequency analysis,

percentage analysis was used for categorical variables and the mean & S.D were used for continuous variables

RESULTS

In our study, the patients ranged from the age of 19 to 65 years, and 44% were between 35 to 45 years. That are the adult men of productive age group is affected mostly.

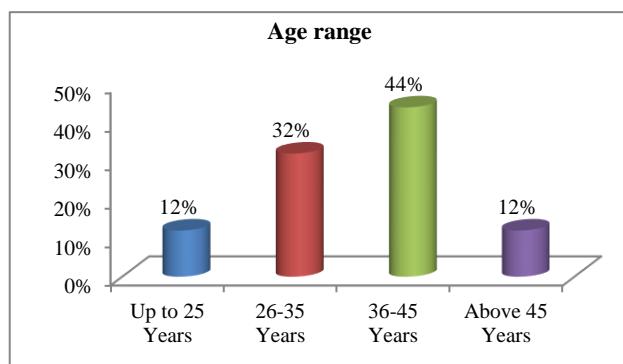


Figure 1: Age distribution.

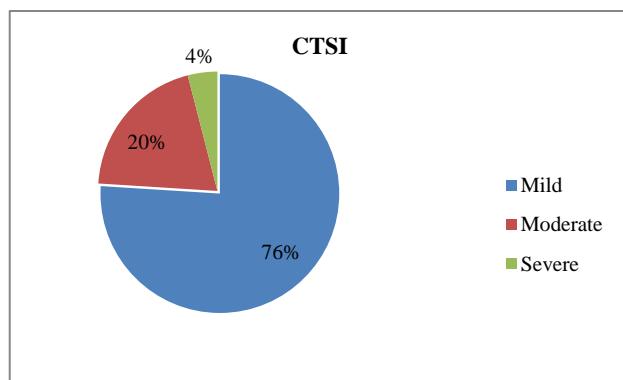


Figure 2: CTSI score.

Table 1: CTSI outcome.

CTSI	Outcome		Improved		Total	
	Complication		N	%	N	%
Mild	2	18.2	38	97.4	40	80.0
Moderate	7	63.6	1	2.6	8	16.0
Severe	2	18.2	0	0.0	2	4.0
Total	11	100.0	39	100.0	50	100.0

Chi square value=33.83**p<0.001

Table 2: BISAP with outcome.

BISAP	Outcome		Improved		Total	
	Complication		N	%	N	%
High	7	46.7	0	0.0	7	14.0
Low	8	53.3	35	100.0	43	86.0
Total	15	100.0	35	100.0	50	100.0

Chi square value=18.99**p<0.001

The cases with mild, moderate and severe CTSI score were 76%, 20% and 4% respectively. Only two cases with BISAP score 3 or more had CTSI >6. Recurrence was seen in 4 cases and all of these patients were Alcoholics. They continued to drink after remission of the first episode and presented with recurrence during the study.

All 38 cases had mild CTSI score low BISAP score and 2 cases who had severe CTSI score had a high BISAP score. The patients with severe CTSI score were died whereas cases with moderate and mild severity have survived. Thus CTSI score predicts the mortality clearly.

BISAP score picks up the complications more clearly than the CSI score. The 35 cases with low score never developed complications and all the cases with high score developed complications whereas the CSI scores are overlapping. The mortality rate was 4% in our study. The expired patients had high BISAP score. 10% of cases with high BISAP score survived.

DISCUSSION

The prediction scores and management tools keep on developing which means there is a definite dilemma in risk stratification and appropriate treatment strategy that need to be started at the appropriate time. The list of causative factors goes a long way and common causes as described in standard texts may not be applicable to all regions as found in this study.⁸ Alcohol is the major cause of this study. The prevalence of alcoholism in the regional population may attribute to this situation. Hence Alcoholism population and policymakers may consider the remedies since it affects mainly the adult men of the productive age.⁹ Most of the cases treated in this government facility belong to middle or low socioeconomic status, so the disability of the adult population can potentially affect the economic growth and quality of life of their own and ultimately of society/state. All these patients with the alcohol-related disease are counseled along with their family and it empathized that the alcoholism is the primary disease. They all were referred to de-addiction centers.¹⁰ Gallstone disease is the next common cause in our study, that too in females. Since this is the common cause all over the world, all the patients with acute pancreatitis must be screened for gallstones.¹¹ Once the common cause is excluded the possible etiological factor must be sought for to attain early remission and to take steps to prevent the disease in future. As recurrent attacks clearly result in morbidity it is always better to spend time and money on further evaluation to identify a cause before concluding it as idiopathic. Usually, the detailed history and clinical examination will give a clue towards the etiology. BISAP score is the recently developed, reliable and easy system to stratify the risk of Acute Pancreatitis.¹² It can be calculated in the center which has a basic laboratory and X ray/USG facility. Usually, these are available in the district headquarter hospitals. The sophisticated facilities

or special training is not required to calculate this and there is no long waiting time as happens with the CT scan. Once the score is known, the center for the management of the disease can be clearly decided.¹³ As the high-risk cases must be treated at high dependency units this decision can potentially influence the outcome. However, gallstone complicating can be referred to the appropriate center for further management.¹⁴ The cases with low BISAP score need not undergo with CECT since the negative predictive value of BISAP of almost 100%.¹⁵ CECT is available only in the higher centers and it involves transportation, more time, higher cost and long waiting time. CECT is not immediately available since it cannot be in the intense phase of the disease. And also CECT carries the risk of contrast allergy and radiation exposure.¹⁶ This study shows that the BISAP score is the best in predicting the prognosis than the CTSI. The sensitivity and negative predictive value of BISAP is more than the CTSI. In this study, BISAP correlates well with the outcome as the patients with a low score (35) did not develop complications and all patients with high score developed complications. Whereas the CTSI scores were overlapping. Hence the patients with low BISAP scores, <3, need not undergo CT scan unless specifically required and can be treated at district level centers.¹⁷ This reduces the cost and saves time for the both, patients as well as the service providers. Even it can reduce the overload of cases at the higher centers. As BISAP is a bedside study and calculated at the time of admission, clinically it can be valued higher than the CTSI which is usually done after 48 hours.¹⁸ The most of the articles state that gallstone as the common cause and alcohol-related pancreatitis is on increasing trend. Few studies show alcohol and gallstones were equally related to pancreatitis. In an article published in Medical council on alcohol stated that abstinence from alcohol after the first episode protects against the recurrence. In a study conducted at Banaras Hindu University concluded that no single scoring system is ideal for predicting the severity of acute pancreatitis and a system can be chosen according to the institutional facility.¹⁹ In a journal published in American journal of gastroenterology, a prospective analysis of BISAP scoring in assessing the mortality showed statistically significant mortality rate when BISAP score was high. In our study alcohol is the most common etiology and BISAP serves as a simple and reliable prognostic score.²⁰

CONCLUSION

Men were most commonly affected than women with a ratio of 9:1. The age group affected was in 35 to 45 years of age with a mean age of 39. Alcohol is the most common etiological factor for acute pancreatitis in this regional population. The morbidity rate is 26% and the mortality rate in patients with severe pancreatitis was 4%. The BISAP score is more accurate in predicting disease severity and significantly than CTSI in this study.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Georgios I, Papachristou GI, Venkata Muddana V, Dhiraj Yadav D, et al. Complications, and Mortality in Acute Pancreatitis. *Am J Gastroenterol.* 2010;105:435-41.
2. Gravante G, Garcea G, Ong SL, et al. Prediction of mortality in acute pancreatitis: A systematic review of the published evidence. *Pancreatology.* 2009;9:601-14.
3. Robins SL, Kumar V. Basic pathology. WB Sounders Company, West Washington Square, PA, USA. 1987;718-31.
4. Gao W, Yang HX, Ma CE. The value of BISAP score for predicting mortality and severity in acute pancreatitis: a systematic review and meta-analysis. *PLoS one.* 2015 Jun 19;10(6):e0130412.
5. Tenner S, Baillie J, DeWitt V, Vege SS. American college of gastroenterology guideline: management of acute pancreatitis. *Am J Gastroenterol.* 2013;108(9):1400-15.
6. Moreau JA, Zinsmeister AR, Melton LJ 3rd, DiMagno EP. Gallstonepancreatitis and the effect of cholecystectomy. *Mayo Clin Proc.* 1988;63:466-73.
7. Choudari CP. Idiopathic pancreatitis: yield of ERCP correlated with patient age. *Am J Gastroenterol.* 1998;93:1654A.
8. Aliperti G. Complications related to diagnostic and therapeutic endoscopic retrograde cholangiopancreatography. *Gastrointest Endos Clin North Am.* 1996;6:379-407.
9. Steinberg WM, Goldstein SS, Davis ND, Shamma'a J, Anderson K. Diagnostic assays in acute pancreatitis. *Ann Intern Med.* 1985;102:576-80.
10. Singh VK, Wu BU, Bollen TL, Repas K, Maurer R, Johannes RS, et al. A prospective evaluation of the bedside index for severity in acute pancreatitis score in assessing mortality and intermediate markers of severity in acute pancreatitis. *Am J Gastroenterol.* 2009 Apr;104(4):966.
11. 42nd European Pancreatic Club (EPC) Meeting: Abstracts June 16-19, 2010, Stockholm, Sweden. *Pancreatology.* 2010;10(2-3):344.
12. Tenner S. Initial management of acute pancreatitis: Critical issues during the first 72 hours. *Am J Gastroenterol.* 2004;99:2489-94.
13. Uhl W1, Warshaw A, Imrie C, Bassi C, McKay CJ, Lankisch PG, et al. IAP guidelines for the surgical management of acute pancreatitis. *Pancreatology.* 2002;2(6):565-73.
14. Wu BU, Johannes RS, Sun X, Tabak Y, Conwell DL, Banks PA. The early prediction of mortality in acute pancreatitis: a large population-based study. *Gut.* 2008;57:1698-703.
15. Kumar V, Abbas AK, Fausto N, Aster JC. *The Pancreas: Robbins and Cotran Pathologic Basis of Disease.* Elsevier. 2010:893.
16. Ranson JHC. Etiological and prognostic factors in human acute pancreatitis. A review. *Am J Gastroenterol.* 1982;77:633.
17. Balthazar EJ, Ranson JHC, Naidich DP, Megibow AJ, Caccavale R, Cooper MM. Acute pancreatitis: Prognostic Value of CT. *Radiology.* 1985;156:767-72.
18. Khanna AK, Meher S, Prakash S, Tiwary SJ, Singh U, Srivastava A, et al. Comparison of Ranson, Glasgow, Predicting Severity, Organ Failure, Pancreatic Necrosis, and Mortality in Acute Pancreatitis. *HPB Surgery.* 2013;367581:1-10.
19. 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. *Am J Gastroenterol.* 2010;105:435-41.
20. Cho JH, Kim TN, Chung HH, Kim KH. Comparison of scoring systems in predicting the severity of acute pancreatitis. *World J Gastroenterol.* 2015;21:2387-94.

Cite this article as: Duraisami V, Balraj G, Rengan V. Comprehensive analysis of etiology, prognosis and clinical outcome of acute pancreatitis in a tertiary care center. *Int Surg J* 2018;5:3947-50.