Assesment of the Severity of Acute Pancreatitis by Ranson's Criteria and Modified CT Severity Index

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ABSTRACT

Introduction: Acute Pancreatitis is a common condition presenting as acute abdomen. Diagnosis of the condition is very important for proper management. Because of the variability and seeming unpredictability of acute pancreatitis, clinical scoring systems have been developed to predict the severity of acute pancreatitis Study aimed to assess the severity of acute pancreatitis in patients admitted in the department of surgery, Rajindra Hospital, Govt. Medical College, Patiala

Material and Methods: Prospective study was done on 30 patients who were admitted with clinical diagnosis of acute pancreatitis in surgery department. Routine investigations, ultrasound and CECT abdomen were done. Ranson's criteria is measured within the first 48 hours of admission to the hospital. Patients were managed accordingly and followed up every 2 weeks on outpatient basis after discharge for upto 6 months.

Results: The most common cause of pancreatitis was alcohol abuse. As per Ranson's score, 11 out of 30 (36.6%) patients were diagnosed as having mild pancreatitis and 19 out of 30(63.3%) patients were diagnosed as having severe pancreatitis. Based on CECT findings, maximum number of patients 18 (60%) included in this study had moderate, 9(30%) had severe and 3(10%) patients had mild pancreatitis. MCTSI proved to be a significant investigation in identifying local complications. Though the presence of 3 or more Ranson's criteria showed increased risk for complications, but the results did not reach statistical significance.

Conclusions: Ranson's and MCTSI plays an important role in predicting severity, morbidity and mortality of acute pancreatitis.

Keywords: Acute, Pancreatitis, Ranson, CECT.

INTRODUCTION

Acute pancreatitis is the most terrible of all the calamities occurring in conjunction with the abdominal viscera.[1,2] The majority of patients have mild interstitial edematous pancreatitis (IOP) which is self-limiting. However 20% have severe acute pancreatitis (SAP) which can progress to a systemic inflammatory response syndrome (SIRS) and result in septic systemic complications with significant morbidity and mortality.[3] Because of the variability and seeming unpredictability of acute pancreatitis, clinical scoring systems have been developed to predict the severity of acute pancreatitis and, as important, for patient stratification and enrollment in clinical trials.[4] Ranson's criteria is the most commonly used scoring system. The CT severity index (CTSI) is now widely used in describing CT findings of acute pancreatitis and serves as the radiological scoring system. Study aimed to assess the severity of acute pancreatitis in patients admitted in the department of surgery, Rajindra Hospital, Govt. Medical College, Patiala

MATERIAL AND METHODS

This prospective single centre observational study was conducted in 30 patients with clinical diagnosis of acute pancreatitis admitted in the department of surgery, Rajindra Hospital, Govt. Medical College, Patiala. Patients with chronic pancreatitis, Outdoor cases,and patients who refused for this study were excluded from the study. Ranson's criteria is based on 11 clinical and laboratory parameters measured within the first 48 hours of admission to the hospital. And for complete assessment of patients, 48 hours is required and Ranson score ≥3 defines severe pancreatitis.

Ranson score ≥3 defines severe pancreatitis

CECT was done in patients and. MCTSI (Mortele et al 2004) was calculated which includes:

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

Plus

- 2 points for less than 30% necrosis
- 4 points for more than 30% necrosis
- 2 points for any extrapancreatic complications (one or more of pleural effusion, ascites, vascular complications, parenchymal complications, or gastrointestinal tract involvement)

The CT findings of acute pancreatitis were graded according to modified CT severity index and categorized as mild (0-2 points), moderate (4-6 points), or severe (8-10 points) pancreatitis.

STATISTICAL ANALYSIS

Microsoft office 2007 was used for the statistical analysis. Descriptive statistics like mean and percentages were used for the analysis.

RESULTS

In our study of 30 patients, maximum number of patients (12 patients) present between 26 to 40 years (table 1). According to our study, maximum number of patients were female (Table 2). As per Ranson's score, 11 out of 30 (36.6%) patients were diagnosed as having mild pancreatitis and 19 out of 30 (63.3%) patients were diagnosed as having severe pancreatitis (table 3,4). Depending upon the morphological/inflammatory changes

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in pancreatic, peripancreatic and extra pancreatic regions on CT scan, the patients in our study group were categorized according to Modified CTSI system into 3 groups i.e. Mild, Moderate and Severe. Maximum number of patients 18 (60%) included in the study were having moderate MTCSI (table 4,5). Table-6 shows correlation Of MCTSI And Ranson's Score.

DISCUSSION

In our study 22(73.3%) patients were malems and 8 patients (26.67%) were females

This is in comparison to study by Balthazar et al[5] (1985) in which there were 75% male patients and in a study by Kim et al[6] (2008) in which 70% patients were male. In our study 40.0% patients were between 26-40 years of age and 26.67%

Age	Patients (n=30)	Percentage%
11-25	5	16.67%
26-40	12	40.0%
41-55	8	26.67%
56-70	4	13.33%
71-85	1	3.33%
Total	30	100.0%

Table-1: Age wise distribution of patients

Sex	Patients (n=40)	%age
Male	22	73.33%
Female	8	26.67%
Total	30	100%

According to our study, maximum number of patients were female.

Table-2: Showing sex distribution of patients

Etiology	Patients	Percentage
Alcohol abuse	16	53.33%
Biliary calculi	9	30.0%
Idiopathic	3	10.0%
Trauma	2	6.67%
Total	30	100.0%

Table-3: Etiology of pancreatitis

Severity	Patients (n=30)	Percentage
Mild	11	36.67%
Severe(>=3)	19	63.33%
Total	30	100.0%

Table-4: Distribution of patients according to Ranson score

MTCSI	Number	Percentage
Mild (0-2)	3	10.0%
Moderate (4-6)	18	60.0%
Severe (8-10)	09	30.0%
Total	30	100.0%

Table-5: Distribution of patients according to modified CTSI score

patients between 41-55 years. This is in comparison to study by Balthazar et al[5] (1985) in which average age was 45 years. In another study on pancreatitis done by Khanna et al[7] (2013), mean age of presentation was 40.5 years.

Severity Of Pancreatitis As Per Ranson's Score

In our study, when Ranson's score was employed, acute pancreatitis was graded as mild in 11 out of 30 (36.6%) and severe in 19 out of 30(63.3%) patients. In contrast to a study by Papachristou GI et al[8],138 out of 185(74.6%) patients had mild and 47 out of 185(25.4%) patients had severe pancreatitis. In another study by Cho J H et al[9] in 2015, 140 out of161(87%) patients had mild and 21 out of 161(13%) patients had severe pancreatitis. The presence of higher number of patients of severe pancreatitis in our study is attributed to the fact that our hospital being a tertiary care centre, very sick patients having severe pancreatitis were referred to us.

Severity Of Pancreatitis As Per Modified CTSI

On the basis of severity of pancreatitis on Modified CTSI score patients were categorized into 3 grades-mild, moderate and severe. In our study, maximum number of patients 18 out of 30 (60%) had moderate, 9 out of 30(30%) had severe and 3 out of 30 (10%) patients had mild pancreatitis. In a study by Mortele et al[10] (2004) 42 out of 66 (63.63%) patients had mild pancreatitis, 19 out of 66 (28.78%) had moderate and 5 out of 66(7.57%) had severe pancreatitis. In another study done by Ahmad Irshad et al[11], 9 out of 50(18%) patients had mild, 19 out of 50(38%) had moderate and 22 out of 50(44%) patients had severe pancreatitis.

The presence of higher number of patients of moderate and severe pancreatitis in our study is attributed to the fact that our hospital being a tertiary centre, very sick patients having severe pancreatitis were referred to us. Secondly higher incidence of severe pancreatitis and moderate pancreatitis can be explained by the high prevalence of alcohol abuse in this part of country, as alcohol abuse leads to severe pancreatitis.[12-14]

Correlation Of MCTSI And Ranson's Score In Predicting Severity

In our study, out of 3 patients of MCTSI 0-2, all 3(100%) had Ranson's score of less than 3. Out of 18 patients of MCTSI score 4-6, 8 patients (44.45%) had Ranson's score less than 3 and 10 patients(55.55%) had Ranson's score more than 3. Out of 9 patients of MCTSI 8-10, no patient had Ranson's score less than 3 and all patients had Ranson's score more than/equal to 3. In a study done by Khanna A K et al[7] (2013), out of 72 patients, 37(51.4%) patients had Ranson's score less than 3(mild pancreatitis) and 35(48.6%) patients had Ranson's score more than 3(severe pancreatitis). 23(42.6%) patients had CTSI less than 5 and 31 (57.4%) had CTSI more than 5.

So in our study we have observed that patients with higher MCTSI score also have higher Ranson's score.

MTSCI	Number of patients	Ranson Score			
		< 3	Percentage	≥3	Percentage
0-2	3	3	100	00	0.0
4-6	18	8	44.45	10	55.55
8-10	9	0	0.0	09	100
Total	30	11	36.67	19	63.33

Table-6: Correlation Of MCTSI And Ranson's Score

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CONCLUSION

We concluded both Ranson's and MCTSI plays an important role in predicting severity, morbidity and mortality of acute pancreatitis. MCTSI was found to be very useful in predicting the local complications whereas Ranson's score was not able to predict local complications. Though the presence of 3 or more Ranson's's criteria showed increased risk for complications, but the results did not reach statistical significance. So it is concluded that both Ranson's and MCTSI are useful modalities to stage the severity of inflammatory process and to predict morbidity and mortality of the disease but MCTSI is an excellent modality to detect the pancreatic necrosis and to depict local complications of acute pancreatitis.

REFERENCES

1. Moynihan B: Acute pancreatitis. Ann Surg. 1925;81:132.
2. Carey LC: Extra-abdominal manifestations of acute pancreatitis. Surgery. 1979; 86:337.
3. Kumar V, Abbas AK, Fausto N, Aster JC. The Pancreas: Robbins and Cotran Pathologic Basis of Disease. Elsevier. 2010;19:893.
4. Ranson JHC: Etiological and prognostic factors in human acute pancreatitis: A review. Am J Gastroenterol. 1982; 77:633.
5. Balthazar EJ, Ranson JHC, Naidich DP, Megibow AJ, Caccavale R, Cooper MM. Acute pancreatitis: Prognostic Value of CT. Radiology. 1985;156:767-72.
6. Kim YS, Lee BS, Kim SH, Seong JK, Jeong HY, Lee HY. Is there correlation between pancreatic enzyme and radiological severity in acute pancreatitis? World J Gastroenterol. 2008;14:2401-05.
7. Khanna AK, Meher S, Prakash S, Tiwary SJ, Singh U, Srivastava A et al. Comparison of Ranson, Glasgow, MOSS, SIRS, BISAP, APACHE-II, CTSI Scores, IL-6, CRP, and Procalcitonin in Predicting Severity, Organ Failure, Pancreatic Necrosis, and Mortality in Acute Pancreatitis. HPB Surgery. 2013;367581:1-10.
8. 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.
9. Joon Hyun Cho, Tae Nyeun Kim, Hyun Hee Chung, Kook Hyun Kim.(Comparison of scoring systems in predicting the severity of acute pancreatitis).World J Gastroenterol. 2015;21:2387–94.
10. Mortele KJ, Wiesner W, Intriere L. A modified CT severity index for evaluating acute pancreatitis: improved correlation with patient outcome. AJR Am J Roentgenol. 2004;183:1261-5.
11. Irshad Ahmad Banday, Imran Gattoo, Azher Maqbool Khan, Jasima Javeed, Ghanshyam Gupta, Mohmad Latief (Modified Computed Tomography Severity Index for Evaluation of Acute Pancreatitis and its Correlation with Clinical Outcome: A Tertiary Care Hospital Based Observational Study). J Clin Diagn Res. 2015;9:TC01–TC05.
12. Lipee Nath, Rajesh Kumar Dhanowar, Pradip Kumar Tiwari. Evaluation of complication and prognosis in acute pancreatitis by modified CT severity index. International Journal of Contemporary Medical Research. 2016;3:1888-1890.
13. Ronak Vyas , Harsh Trivedi, Kashyap Vyas, Shweta Sharma. Assessment of various parameters, management and complications of acute pancreatitis patients. International Journal of Contemporary Medical Research. 2016;3:1894-1898.
14. N. Kalyani, T.V. Adiseshu Babu. A study of etiological clinical biochemical and radiological profile of patient with acute pancreatitis with reference of out come in government general hospital, GMC, guntur. International Journal of Contemporary Medical Research. 2016;3:965-967.