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Original Research

To assess the accuracy of BISAP scoring system vs Ranson's scoring system in predicting severity in an attack of acute pancreatitis

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ABSTRACT:
Background - Acute pancreatitis is pancreatic inflammatory condition which can progress to a systemic inflammatory response syndrome (SIRS) and result in septic systemic complications with significant morbidity and mortality. **Material and method** - The study included 60 patients with acute pancreatitis. The two different scoring systems (BISAP and Ranson's) were compared and analyzed to assess the accuracy in patients with acute pancreatitis. **Result** - BISAP score system has proved to be a powerful tool in predicting the severity of acute pancreatitis in par with Ranson's score. **Conclusion** - BISAP scoring system accurately predicts the outcome in patients with acute pancreatitis.
Key words – Acute pancreatitis , BISAP score, RANSON'S score

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INTRODUCTION

Acute pancreatitis is the most terrible of all calamities that occur in connection with the abdominal viscera. The suddenness of its onset, the illimitable agony that accompanies it, and the mortality attendant upon it, all render it the most formidable of catastrophe[1].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[2]. 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 enrolment in clinical trials[3]. The purpose of this study was to find out the prognostic significance of BISAP scoring system and its accuracy in predicting the severity of disease in comparison with Ranson score[4]. So the aim of present study was to assess the accuracy of BISAP scoring system vs Ranson's scoring system in predicting severity in an attack of acute pancreatitis.

MATERIALS AND METHODS

Our present study was prospective randomized study and it includes all confirmed cases of acute pancreatitis admitted in Rajindra Hospital Patiala during the study period. Patients with chronic pancreatitis or recurrent pancreatitis, those undergone previous surgery for any pancreatic pathology, old treated cases of acute pancreatitis, Sequelae of Acute Pancreatitis, Patients not willing for informed consent were excluded from the study. 60 Confirmed cases

of acute pancreatitis based on 2 or more of the following were taken for study:

- Characteristic abdominal pain of acute pancreatitis.
- Serum amylase or lipase level 3 or more times the upper limit of normal.

Thorough history taking and clinical examination of each patient was carried out per the prepared Performa.
Complete blood count, renal function test, liver function test, electrolytes (Na+, K+, Ca++ and total Calcium levels), coagulation profile, serum amylase, serum lipase, C reactive protein levels.
X ray chest and abdomen, USG whole abdomen, Contrast Enhanced Computed Tomography of the whole abdomen.
BISAP score and Ranson's score were calculated in all such patients based on data obtained within 24 hours of hospitalization and at 48 hours.
Bedside index of severity in acute pancreatitis (BISAP) score

- BUN >25 mg/dl (8.9 mmol/L)
- Abnormal mental status with a Glasgow coma score<15.
- Evidence of SIRS (systemic inflammatory response syndrome).
- Patient age >60 years old.
- Imaging study reveals pleural effusion.

Ranson's criteria
For non-gallstone pancreatitis, the parameters are:
At admission the age > 55 years, WBC> 16000 cells/mm^3 ,Blood glucose > 11 mmol/L (> 200 mg/dL) , Serum AST > 250 IU/, Serum LDH > 350 IU/L
Within 48 hours: Serum calcium < 2.0 mmol/L , Hematocrit fall > 10% , Oxygen (hypoxemia PaO2 < 60 mmHg) , BUN increased by 1.8 or more mmol/L (5 or more mg/dL) after IV fluid hydration, Base deficit (negative base excess) > 4 mEq/L , Sequestration of fluids > 6 L
For gall stone pancreatitis, the parameters are: At admission: Age (in years) > 70 years,White blood cell count > 18000 cells/mm3, Blood glucose > 12.2 mmol/L , Serum AST > 250 IU/L, Serum LDH > 400 IU/L
Within 48 hours**:** Serum calcium < 2.0 mmol/L , Hematocrit fall > 10% , Oxygen (hypoxemia PaO2 < 60 mmHg) ,BUN increased by 0.7 or more mmol/L, Sequestration of fluids > 4 L

OBSERVATION AND RESULTS

- This study was conducted in Rajindra hospital, Patiala.
- Total number of patients studied were 60.
- According to Altanta Revised criteria, 38 patients had mild pancreatitis, 19 patients had moderately severe pancreatitis, 3 patients had severe pancreatitis.
- Of the 60 patients, 37 patients had ranson's score less than or equal to 3. 23patients had a score of more than 3.
- Of the 60 patients, 39 patients had a BISAP score less than or equal to 3, 21 patients had a score more than 3.

Etiology	Mild	Moderately Severe	Severe	Total
Alcohol	**17**	**8**	**3**	**28**
Gall Stones	**14**	**4**	**3**	**21**
Idiopathic	**7**	**4**	**0**	**11**

Table 1 - Etiology of acute pancreatitis

Ranson's Score	No. of patients
1	**10**
2	**19**
3	**8**
4	**11**
5	**7**
6	**2**
7	**2**
8	**1**
Total	**60**

Table 2 - Ranson's Score

BISAP Score	No. of patients
1	10
2	20
3	9
4	19
5	2
Total	60

Table 3 -BISAP Score

Ranson's Score	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Accuracy
> = 3	100	56	57.69	100	72.5
> = 4	93.33	96	93.33	96	95
> = 5	53.33	100	100	78.1	82.5

Table 4 - Prediction of severity by Ranson's score

Ranson's score of greater than or equal to 4 predicted 93 % of severe attacks and 96 % of mild attacks with a positive predictive value of 93.33 and negative predictive value of 96 and accuracy of 95.

Ranson's score of greater than or equal to 3 predicted more number of severe attacks (100%) but less number of mild attacks (56%) with a PPV of 57.69 and NPV of 100 and accuracy of 72.5 .

Ranson's score of greater than or equal to 5 predicted less number of severe attacks (53%) and branded more severe attacks as mild attacks.

Ranson's score of greater than or equal to 4 had the best sensitivity, specificity and accuracy.

BISAP Score	Sensitivity	Specificity	Positive Predictive Value	Negative Predictive Value	Accuracy
< = 3	93.33	96	93.33	96	95
> 3	86.66	100	100	92.6	95

Table 5 - Prediction of severity by BISAP score

BISAP score of less than or equal to 3 predicted 93.33% of severe attacks and 96% of mild attacks with a PPV of 93.33 and NPV of 96 and accuracy of 95.

BISAP score of less than or equal to 3 had the best sensitivity, specificity and accuracy.

DISCUSSION

The study includes 60 patients with acute pancreatitis. In this study, the two different scoring systems (BISAP and RANSON'S) were compared and analyzed to assess the severity in patients with acute pancreatitis. An attempt also made to compare this study with previous similar studies done by others.In present study alcohol abuse was the most common causative factor for acute pancreatitis with 47%, biliary calculi were responsible for 35% and however in the remaining 18%, etiology was idiopathic i.e. no cause could be established. Simmons et al[5] reported 72% incidence of pancreatitis due to alcohol abuse, 16% due to biliary disease and 12% due to idiopathic causes. In a study by Bohidar et al[6] gallstones were responsible for 48% cases of acute pancreatitis and alcohol abuse accounted for 28% cases of pancreatitis and in a study by Kim et al[7] out of total 119 patients of acute pancreatitis, 41.2% patients had biliary pancreatitis, 38.6% alcoholic pancreatitis, idiopathic in 17.6% cases and drug induced in 2.6% patients. In our study results were as sensitivity (100%,93.33%), specificity of (56%,96%), PPV of (57.69%,93.33%), NPV of (100%,96%), accuracy (72.5%, 95%) for Ranson's and BISAP score respectively. This study compare with another study done by Papachristou et al[8] where sensitivity of (70.42%,80.41%), specificity of (92.4%,71.9%), PPV of (57.7%,40%), NPV of (84.3%,90.1%), for BISAP and RANSON'S respectively and study done by J. Lalith et al[9] where sensitivity of 71.43%, specificity of 95.35%, PPV of 71.43%, NPV of 95.35%, diagnostic accuracy of 92% for BISAP score whereas RANSON'S score has sensitivity of 78.57%, specificity of 74.42%, PPV of 43.33%, NPV of 95.52 %, diagnostic accuracy of 88%. So our study results were comparable to the previous studies.

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CONCLUSION

From this study, we can conclude that BISAP scoring system has proved to be a powerful tool in predicting the

severity of acute pancreatitis in par with Ranson's score. BISAP scoring system is very simple, cheap, easy to remember and calculate. BISAP scoring system accurately predicts the outcome in patients with acute pancreatitis.

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