Comparative Analysis Between Ranson and Bisap Score in Predicting Severity of Acute Pancreatitis

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Abstract

Background: A spontaneous inflammation of the pancreas is acute pancreatitis that may be mild or life-threating. It is a highly common disease that poses a huge surgical risk to surgeons globally. The objective is to research was undertaken to compare the Ranson and BISAP scores for predicting the severity of acute pancreatitis. Design:This was a hospital based prospective study. Participants: 100 patients both males & females with acute pancreatitis. **Subjects and Methods:** Patients having history of inflammation and clinical findings of acute pancreatitis and presence of large oedema pancreas in the abdomen identified via USG or CT. The BISAP and Ranson scores were used to predict severity. **Results:** In this study, acute pancreatitis was 10 times higher in men than women. The average age was 41.18. In this study, the average age of non-survivors was 60, relative to 41.23 years of survivors. In this study, alcohol was the most common etiological factor (59 percent). **Conclusion :** In patients with acute pancreatitis BISAP findings are also useful in assessing the risk of serious and predictive mortality as in Ranson's score.

Keywords: BISAP score, Ranson score, Pancreatitis.

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Introduction

A spontaneous inflammation of the pancreas is acute pancreatitis that may be mild or life-threating It is a highly common disease that poses a huge surgical risk to surgeons globally. It is a complex disease, ranging from mild self-limiting inflammation to progressively deteriorating, life-threatening illnesses. Acute pancreatitis has a prevalence of about 2.29 percent.[1] Severe acute pancreatitis may be acute hemorrhagic necrotization, acute oedema or acute persistent. Early identification of patients at risk of experiencing a harmful attack is of significant importance for the advancement of clinical plans and improved outcomes.

In total 10 to 20% of patients are affected by severe acute pancreatitis (SAP) and about 20% of all acute pancreatitis cases are SAP deaths.[2] Precise intensity predictions are important to promote longevity. There are several evaluation criteria for predicting acute pancreatitis prognosis and severity that help guide case management and treatment of patients. In the outpatient setting, nevertheless, little has been shown to do anything more than rational professional opinion. Therefore, fast, non-invasive, accurate and quantitative predictive criteria would be ideal for evaluation and assessment which are widely accessible.

Subjects and Methods

Place of Study : This study was conducted at Government Stanley Medical College and Hospital, Chennai.

Type of Study : This is a prospective study.

Sample Collection : Sample Size-100 Patients

Sampling Methods : Consecutive sampling.

Inclusion Criteria

● Patients having history of inflammation and clinical findings of acute pancreatitis and presence of large oedema pancreas in the abdomen identified via USG or CT

Exclusion Criteria

● Patients with Chronic pancreatitis.

Statistical Analysis

Data was provided in the form of statistical tables and maps. Version 21 of the SPSS programme was used for statistical analysis.

Ethical Approval

The consent of the Institutional Ethics Committee was obtained prior to the start of the study.

Results

Table 1: Distribution based on Different Clinical Symptoms

Incidence of Symptoms	Total Number of patients	(%)
Abdominal Pain	94	94.00%
Nausea/Vomiting	26	26.00%
Fever	30	30.00%
Abdominal Distension	14	14.00%
Jaundice	15	15.00%

Table 2: Various etiologies among patients

Aetiology	Total Number of patients	(%)
Idiopathic	10	10.00%
Gall stone diseases	22	23.00%
Hypertriglyceridem	4	4.00%
Alcohol Consumption	58	58.00%
Drug induced	3	3.00%
Trauma	3	3.00%

Correlation of RANSON and BISAP score along with severity:

Table 3: Ranson and BISAP scores - less severity

	BISAP's score $\leq$ 2	Ranson's score $\leq$ 3	X^2	P-Value
Organ Failure rate	4	2	0.2270	0.6335
Pancreatic necrosis	1	2	0.1204	0.7286
Mortality rate	0	1	0.9630	0.3260

Discussion

Acute pancreatic disease is a common disease with a large spectrum of ailments. A high rate of morbidity and

Table 4: Correlation of BISAP and RANSON with more severity

	BISAP's score $\leq$ 2	Ranson's score $\leq$3	X^2	P-Value
Organ Failure rate	10	12	5.5330	0.0180
Pancreatic necrosis	8	7	5.9740	0.0140
Mortality rate	4	3	3.9820	0.0465
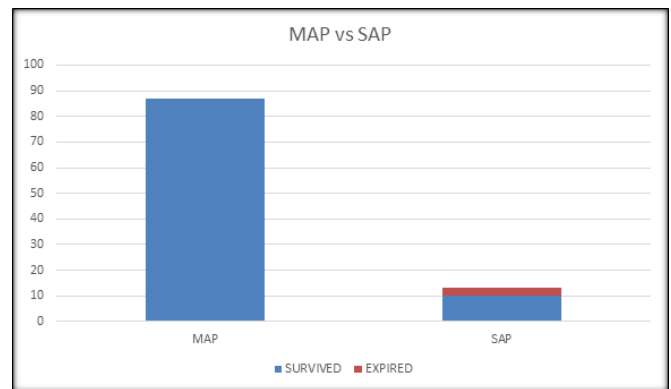
Figure 1: MAP Vs SAP

Table 5: BISAP score for predicting organ failure

		Organ Failure		Total
		Yes	No	
BISAP	$\geq$3	10	4	14
	$\leq$2	4	82	86
Total		14	86	100

Table 6: BISAP score to estimate organ failure

Parameters	Estimate	Lower-95 CI	Upper-95 CI's
Specificity	95.30%	88.61	98.19
Sensitivity	71.40%	45.20	88.29
Positive value predictive	71.40%	45.36	88.29
Negative value predictive	95.30%	88.64	98.19
Diagnostic accuracy	92%	85	95.90

Table 7: Ranson score in predicting organ failure

		Organ Failure		Total
		Yes	No	
Ranson	>3	12	8	20
	≤3	2	78	8
Total		14	86	100

Table 8: Ranson score for predicting organ failure

Parameter	Estimate	Lower-95 CI's	Upper-95 CI's
Specificity	75.40%	65.30	83.45
Sensitivity	79.55%	53.40	91.45
Positive Value Predictive	43.30%	29.76	50.40
Negative value predictive	95.50%	87.65	98.45
Diagnostic accuracy	88%	65.71	82.46

Table 9: BISAP score for predicting necrosis

		Necrosis		Total
		Yes	No	
BISAP	≥3	8	6	14
	≤2	1	85	86
Total		9	91	100

Table 10: BISAP score in the prediction of necrosis

Parameter	Estimate	Lower-95 CI's	Upper-95 CI's
Sensitivity	81.80%	52.31	94.85
Specificity	94.40%	87.50	97.55
Positive value predictive	64.30%	38.75	83.65
Negative value predictive	97.65%	91.90	99.35
Diagnostic accuracy	93%	86.26	96.55

Table 11: Ranson score for predicting necrosis

		Necrosis		Total
		Yes	No	
Ranson	≥3	7	13	20
	≤2	2	78	80
Total		9	91	100

Table 12: Ranson score in predicting necrosis

Parameter	Estimate	Lower-95 CI's	Upper-95 CI's
Specificity	77.55%	65.29	85.95
Sensitivity	90.89%	61.25	97.39
Positive Value Predictor	43.57%	30.25	60.21
Negative value predictive	98.57%	92.35	99.76
Diagnostic accuracy	91%	85.71	95.46

Table 13: BISAP score in predicting mortality

		Mortality		Total
		Yes	No	
BISAP	≥3	4	10	14
	≤3	0	86	86
Total		4	96	100

Table 14: BISAP score in predicting mortality

Parameter	Estimate	Lower-95 CI's	Upper-95 CI's
Sensitivy	100%	51.00	100
Specificity	95.85%	89.75	98.35
Positive value predictive	50%	21.50	78.45
Negative value predictive	100%	96	100
Diagnostic accuracy	97%	90.15	98.45

Table 15: Ranson score in predicting mortality

		Mortality		Total
		Yes	No	
Ranson	≥3	3	17	20
	≤2	1	79	80
Total		4	96	100

Table 16: Ranson score in predicting mortality

Parameter	Estimate	Lower-95 CI's	Upper-95 CI's
Sensitivy	88.55%	62.40	96.45
Specificity	64.40%	54.30	72.45
Positive value predictive	31.33%	22.76	70.40
Negative value predictive	96.52%	87.65	98.50
Diagnostic accuracy	93.01%	85.69	95.46

mortality of immediate, acute pancreatitis was attempted several approaches to avoid this Early Hospitalization could help recognize individuals who need to take aggressive steps to prevent the extreme attack of pancreatitis.

The research contrasted and assessed the severity of the patients with acute pancreatitis with the two separate rating scales (BISAP and RANSON'S). The study also sought to equate this trial with prior trials performed by others identical.

In this study, acute pancreatitis was 10 times higher in men than women. The observation that the alcoholic aspect was the prevalent etiological factor and was most prominent in men should explain these findings, Papachristou et al.[3] (5.1:1), Vikesh K Singh and al.[4] (6:1), were not in line with previous research results.

The mean age was 41,20 years in this study similar to Sarath et al's results (40.8yrs). (49.6 yes). Poppy et al (51.7yrs).[5,6]

In this study, the average age of non-survivors was 60, relative to 41.23 years of survivors. 'The cut of age was 60 years,' age rise has been seen to be well-related to increased mortality events. 'rhos' years are thought to play a crucial part in estimating extreme acute pancreatitis outcomes.

Alcohol (59 percent) was higher than the Bidarkundi et al study.[7] (46.67 percent) and not the results of Vikesh K Singh et al (21.4 percent),4 Papachristou et al,[3] and others (4 percent) were the most prevalent factors, 27 percent and 36 percent respectively. Gall's disease was the main prevalent cause, and some of the other diseases also were identified to have the most common cause.

The mean duration of hospital stay was 12.05 ± 6.9 days, which was strongly associated with the period of hospital stay throughout this study.

The study diagnosed 86 patients with mild to moderate acute pancreatitis grouped into MAP and diagnosed 14 patients with severe acute pancreatitis. The most frequent incidence was abdominal pain (94 percent), followed by fever (30 percent), vomiting (26 percent) and other manifestations. The BISAP score was accurate for all 14 patients. The outcomes have been evaluated by correlating the values of organ failure, necrosis and mortality.

Organ failure analysis demonstrates that the BISAP score was 71.40% sensitive, 95.30% specific, 71.50% PPV, 95.30% NPV, and 92% diagnostic accuracy. Whereas the RANSON score reported a sensitivity of 79.55 percent, a specificity of 75.40 percent, a PPV of 43.30 per cent, an NPV of 95.50 percent, and a diagnostic accuracy of 88 percent.

This correlates closely with a study of Papachristou et al, with sensitivity (70.42%,80.41%), specificity (92.4%,719%), PPV (57.7%,40%), NPV (84.3%, 90.1%) for both BISAP and RANSON'S.[8] Thus, using the test for the CM, Bisap 3 has a significant association with organ failure predictions ($p<0.0$ I), which corresponds well with those of studies by Singh et al and Wu et al.[9,10]

Such complications are mostly found in patients with BISAP <3 and RANSON >3 and The conclusion was then drawn that they are high-risk patients who require intensive supervision and early treatment, if appropriate.

Conclusion

In acute pancreatitis patients, the score from BISAP is about as good as Ranson when assessing the severity frequency and estimating mortality. Moreover, in contrast with Ranson's scores, the materials are easily available and do not require 48 hours to perform the assessment. Which is the correct way to diagnose patients with moderate and severe disorders; it is convenient to use and can also be provided in all settings by the bedside of patients suffering from acute pancreatitis.

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