

Sirs Scoring And Interleukin 6 on Admission As Prognostic Indicators in Severe Acute Pancreatitis

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Abstract: Acute pancreatitis being one of the diseases with varied prognosis due to its varied severity, poses a great difficulty in diagnosis and appropriate management. There are no test and scoring systems that hold significance in the initial 24 hours of the onset of the disease which could indicate the prognosis of the disease. So our study involves using SIRS scoring and IL-6 as prognostic indicators in severe acute pancreatitis.

Methods: SIRS scoring system and serum concentration of IL-6 was evaluated for 30 patients with diagnosis of acute pancreatitis at time of admission. These 30 patients were divided into 2 groups- mild and severe pancreatitis depending on presence of organ failure and/or local complications such as necrosis, abscess or pseudocyst. Correlation between sirs score and IL-6 levels and its role in predicting severity of pancreatitis was evaluated

Result: SIRS score for severe form was more than 2 while mild form had score < 2. Serum concentrations of IL-6 was highly significantly different between the severe group and the mild group on the day of admission. Even SIRS score and IL-6 levels showed significant correlation with severity pancreatitis.

Keywords: Acute Pancreatitis, SIRS, IL-6,

I. Introduction

Acute pancreatitis is a sudden inflammation of the pancreas. It ranges from mild self-limiting disease with almost nil complications to severe necrotizing pancreatitis resulting in multiorgan failure. (1)

Out of the many causes for this condition, Alcohol and gall stones take the top position apart from many other etiological factors such as pancreatic divisum, post ERCP complication, viral causes, scorpion venom etc.

The Pathophysiology of the disease is usually in two phases

1. Extensive pancreatic inflammation and necrosis followed by systemic inflammatory response syndrome that can lead to a multi organ failure.
2. In the second week, there is infection of the necrosed pancreas/ fluid collection with progression to sepsis, multi-organ failure and death

Considering the complexity in the pathophysiology of this disease, determining the severity poses a challenge to the clinicians. At present, there is no standard accepted method in determining the severity and its prognosis.

Many of the practiced scoring systems include

Ranson's scoring (11 criteria)

Glasgow's scoring (8 criteria)

Moss Score (12 criteria)

BISAP score (5 criteria)

APACHE 2 score (14 criteria)

The specificity and sensitivity of these scoring systems range from 55% to 90% The limitations of these scoring systems include inability to obtain scores until 48 hours (Ranson's and Glasgow's) or the complexity of the scoring systems themselves (APACHE 2 scoring) (2) The challenge is to obtain a scoring system that is simpler than the above-mentioned scoring system and yet have a high specificity and sensitivity in determining the severity of the disease as well as serve as a good Prognostic factor. Understanding the pathophysiology of the disease, inappropriate activation of the proteolytic enzymes causing the auto digestion, this is caused by the release of intracellular lysosomal enzymes. With increasing neutrophilic migration to the pancreas, a variety of inflammatory cytokines are released, and these

include IL-1, IL-6, IL-8 and TNF- α .

IL-1 and TNF- α play a central role in acute pancreatitis and initiate systemic complications, also cause release of IL-6 and IL-8 which serve as prognostic indicators. (3)(4)

By early recognition of the disease and predicting its associated complications like Acute Respiratory distress syndrome, Pancreatic pseudocyst, and Multiorgan dysfunction syndrome, if aggressive management and ICU admission is done within 24 hours then the outcome of the disease changes significantly.

Thus, looking at all the aspects of the disease and its pathophysiology the study done was done to bring about the easier scoring systems like SIRS scoring which is Systemic Inflammatory Response Syndrome, and a reliable biochemical test (IL-6) in predicting the course of the disease so that the morbidity and mortality associated with the disease could be reduced significantly. (5)

II. Materials And Methods

Study was conducted in AJ Institute of Medical Sciences, Mangalore by the department of general surgery, between October 2015 to November 2016, after obtaining ethical clearance from the ethical committee of AJ Institute of Medical Science and Research Centre. 30 cases were included in the study and SIRS scoring was done on admission and IL-6 levels were done on admission, within 24 hours. Diagnosis of acute pancreatitis was done patient presenting complaints, history and clinical examination, the diagnosis was confirmed with radiological investigations (CT scan and USG). Human ELISA IL-6 kit was used for determining the IL-6 levels. Acute on chronic pancreatitis, chronic pancreatitis, trauma, post-surgery, pancreatic tumours and complication post ERCP cases were excluded from the study.

III. Statistics And Analysis

The statistics for the study was done with SPSS software version 20 and the methods used were coefficient analysis and Chi square test and P value was analyzed to find significance of the study. P value <0.05 was considered to be statistically significant.

IV. Results

Fig 1 Clinical characteristics and demographical statistics.

Total Number	14 (46.66%)	16 (53.33%)
Male Patients	85.7%	93.75
Female Patients	14.28%	6.25%
Male: Female	12:2	15:1
Alcoholic	10	13
Gall Stones	2	3
Idiopathic	2	0

Fig 1. gives the demographical statistics and the clinical characteristics of the patients selected for the study.

Fig 2 – SIRS scoring and IL-6

2	14	27.86429	24.17483	6.460995	9.3	96.3
3	13	122.4692	23.04298	6.390973	72.3	156
4	3	175.0667	10.98605	6.3428	162.8	184
Total	30	86.26333	58.34668	10.6526	9.3	184

Fig. 2. Of the 30 patients that were included in the study, the SIRS scoring was done on admission and IL-6 test was done within first 24 hours. The table elaborates the IL-6 values for the SIRS score.

Fig 3 – Admission of the Patients.

2	14	0	14
3	4	9	13
4	0	3	3

Fig 3 explains about the admissions of the patients in ICU/ward based on the patient vitals and complications.

Fig 4 – Complications of the patients and their SIRS scoring.

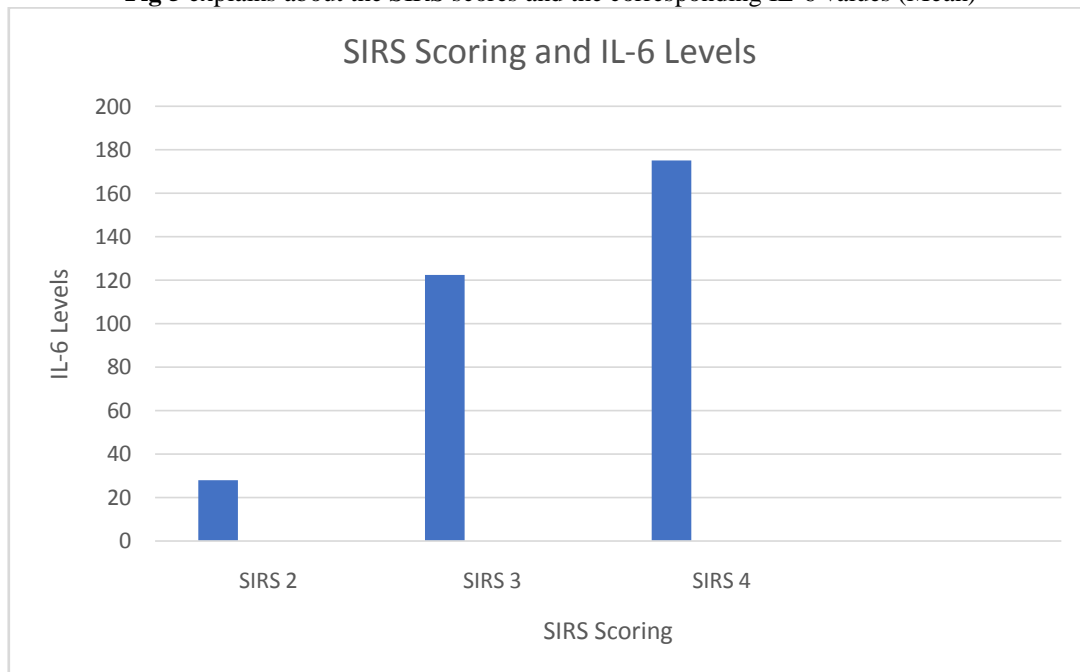
2	14	0	0	0	0	2	2
3	13	9	69.23	4	30.77	6	46.15
4	3	3	100	3	100	3	100
Total	30	12	40	7	23.33	11	36.66
P Value		<0.001		<0.001		<0.001	

Fig 4 explains about the patients in the study and the associated complications like Acute Respiratory Distress Syndrome and Multi Organ Dysfunction Syndrome and Pseudocyst. Chi square test was done and P value was statistically significant.

Fig 5 IL-6 values and SIRS scores

2	27.86429
3	122.4692
4	175.0667

Fig 5 explains about the SIRS scores and the corresponding IL-6 values (Mean)



This graph represents the IL-6 values on the Y axis and SIRS score on the X axis

The above-mentioned tables and graph tells us about the results of the study done. When the selected patients presented to the emergency ward, SIRS scoring was done on admission and IL-6 tests were done within 24 hours. The vitals of the patient and the presence/absence of complications were used to admit the patients under Ward/ICU.

V. Discussion

Severe acute pancreatitis is associated with high mortality rate which affects majority of poor socio-economic background. Many a times the diagnosis of acute pancreatitis is done on autopsy as the presentation is not straightforward.⁽⁶⁾⁽⁷⁾ The severity of the disease could be predicted by IL-6 values in patient presenting with acute pancreatitis. ⁽⁵⁾ Also combining SIRS scoring with IL-6 levels gives us an opportunity at predicting the outcome of the disease keeping in mind the cost effectiveness, thereby providing us the clue to degree of management necessary. Severe acute pancreatitis has a very high mortality risk, If effective and timely managed this mortality numbers could be brought down.

The Pathophysiology of the disease is usually in two phases, this is discussed in the introduction part of this study. Taking these into consideration, our study uses SIRS scoring in patients diagnosed with Acute pancreatitis. Patients with SIRS score were in non-ICU stay and those with scores 3 and 4 required ICU stay with or without ventilator support. SIRS score done on day 1 was associated with high predictability of the severity of the disease. Besides clinical assessment, amylase and lipase was done in the diagnosis of Acute pancreatitis. But neither Amylase nor Lipase predicted the severity of the disease, thus limiting the clinical evaluation of the patient into categorizing as mild or severe disease. IL-6 studies done have shown high predictor value in determining the severity of the disease and it can be measured at least 24 hrs. earlier than markers such as CRP.⁽⁸⁾ Our study confirms the severity of pancreatitis is associated with high IL-6 levels which required ICU care and had associated complications. Thereby combining IL-6 levels and SIRS scoring, it is seen as excellent prognostic indicator in acute pancreatitis which is quite cost effective and relieves us all of complicated scoring systems such as Ranson's, APACHE 2 and Glasgow's.

VI. Conclusion

Acute Pancreatitis is unknown, but there is association of systemic inflammatory response, that is a major contributing factor for the morbidity and mortality of the patient. Hence using SIRS scoring at admission than using other criteria's like Ranson's, Glasgow's, APACHE 2 scoring and combining it with IL-6 which has a high sensitivity (71-100%) and high specificity (86-100%) yields a better approach at management of patient with acute pancreatitis and hence reducing the mortality and morbidity associated with acute pancreatitis. Presently there is no standard used scoring systems and IL-6 is still not yet mainstreamed biochemical investigation in Acute Pancreatitis. Once these are incorporated, the morbidity and mortality associated with the disease will come significantly down.

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*Dr. Dharamdev D. "Sirs Scoring And Interleukin 6 on Admission As Prognostic Indicators in Severe Acute Pancreatitis." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 16, no. 10, 2017, pp. 08-11.