IJBPAS, February, Special Issue, 2022, 11(2): 82-88
ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)
'A Bridge Between Laboratory and Reader'

www.ijbpas.com

A COMPARATIVE STUDY OF ACCURACY (NEUTROPHIL TO LYMPHOCYTE RATIO) AND MCTSI (MODIFIED CT SEVERITY INDEX) SCORING SYSTEM IN PREDICTING THE SEVERITY OF ACUTE PANCREATITIS

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Received 12th July 2021; Revised 14th Aug. 2021; Accepted 27th Oct. 2021; Available online 15th Feb. 2022

https://doi.org/10.31032/IJBPAS/2022/11.2.1010

ABSTRACT

Background-

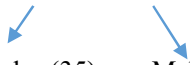
Acute pancreatitis is considered as an acute GI condition which is treated as an emergency. It is a life-threatening disease causing significant morbidity and if it progresses to severe form then the prognosis is poor. Biochemical investigations like serum amylase and lipase level and USG are mainly used for the diagnosis of acute pancreatitis. Gold standard modality for diagnosing acute pancreatitis is CECT. Scoring systems consist of both biochemical and radiological investigations. However, these modalities needs several laboratory investigations which are expensive.

Methodology-

Retrospectively data was collected of patients who were diagnosed as acute pancreatitis. Biochemical markers along with routine blood investigations and radiological investigations such as USG and CT scan were done. Neutrophil to Lymphocyte Ratio and MCTSI, and its accuracy in predicting the severity of acute pancreatitis was seen with the help of revised Atlanta classification.

Results –

Total patients – 100



Females (35) Males (65)

Patients having comorbidities (e.g., diabetes and hypertension) - 25

Comparison of NLR with revised Atlanta classification showed that it is a good predictor of severity in severe, fair predictor in moderate and excellent predictor in mild cases.

Conclusion-

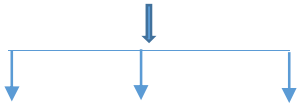
From this study we could conclude that compared to MCTSI, Neutrophil to Lymphocyte is better in assessing the severity of acute pancreatitis along with the revised Atlanta classification.

On the basis of various results observed in our study, it can be said that NLR is a better parameter as it is inexpensive, easily available and less time consuming. This in turn helps in decreasing mortality and morbidity by evaluating the disease early and on time.

INTRODUCTION

The patient with acute pancreatitis presents most commonly presents with severe abdominal pain (radiating to back), nausea and vomiting. Most common causes are alcohol consumption and gallstones. Diagnosis of acute pancreatitis is done clinically, biochemically by raised markers and by radiological imaging. The Atlanta classification was proposed in 1992 which classified acute pancreatitis into mild and severe pancreatitis, later in 2012 it was again revised.

Acute pancreatitis is classified as:



Mild Moderate Severe

Acute pancreatitis was also classified on the basis of local complication- present/absent and organ failure- present/absent along with revised Atlanta classification **[2]**. To predict mortality and morbidity in patients with acute pancreatitis following scoring systems were used-

- Ranson scoring system
- Bedside Index for Severity in Acute Pancreatitis (BISAP) score
- Sequential organ failure assessment (SOFA)
- Glasgow Coma Scale score **[3]**
- Marshall scoring, the Acute Physiologic Assessment and Chronic Health Evaluation II (APACHE II) scoring system

These scoring systems are complicated and mainly dependent on expensive laboratory investigations and they also needs reassessment.

As severity of disease increases the Neutrophil to lymphocyte ratio also increases. The increased in ratio is seen in

acute inflammatory conditions and reduction in this ratio indicates us about worsening of patients health **[4]**.

NLR score of 1-3 is considered normal, score of 6-9 indicates mild, score of 9-18 indicates moderate, and score of >18 as severe.

Diagnosis of acute pancreatitis is done with CECT and USG abdomen pelvis. But the gold standard investigation in diagnosing acute pancreatitis is CECT abdomen pelvis. CECT abdomen pelvis can also tell us about pancreatic necrosis and its other complications.

Aim

To determine the accuracy and relevance of NLR and MCTSI in seeing the prognosis of acute pancreatitis with the help of the revised Atlanta classification as the gold standard. This study also aims the use of NLR in predicting the severity of acute pancreatitis in comparison with MCTSI, which require biochemical investigations.

MATERIALS & METHODS

Study design-

- Retrospective study.

Place of study-

- General surgery outpatient department of Krishna institute of medical sciences, karad.

Inclusion criteria-

- Patients having acute pancreatitis and has underwent CECT abdomen + pelvis at least 72 hours after admission.
- Age between 18 – 75 years.

Medical record and investigations of these patients were collected from the concerned departments. Data includes demography, CBC, MCTSI score on CECT. Depending upon the results of investigations associated complication and status of failure of organ were identified.

RESULTS

Total patients – 100

Females (35) Males (65)

Patients having comorbidities (e.g., diabetes and hypertension) – 25

Mostly the patients came with complains of abdominal pain, also some patients presented with nausea and vomiting along with abdominal pain. All patients had raised markers of acute pancreatitis i.e serum amylase and lipase. All the patients having acute pancreatitis showed following trends:

- Serum amylase – raised
- Serum lipase – raised

Table 1: Predictor of severity

PREDICTOR OF SEVERITY		
	NLR	**MCTSI**
MILD CASES	**Excellent**	**poor**
MODERATE CASES	**Fair**	**good**
SEVERE CASES	**Good**	**excellent**

Table 2: Modified CT severity index score

PROGNOSTIC INDICATOR	POINTS
Pancreatic inflammation	
Normal pancreas	0
Intrinsic pancreatic abnormalities with or without inflammatory changes in peripancreatic fat	2
Pancreatic or peripancreatic fluid collection or peripancreatic fat necrosis	4
Pancreatic necrosis	
None	0
≤30%	2
>30%	4
Extrapancreatic complications (one or more of the following: pleural effusion, ascites, vascular complications, parenchymal complications or gastro-intestinal tract involvement)	2

As per MCTSI

- Mild pancreatitis – 0-2 points
- Moderate pancreatitis –4-6 points
- Severe pancreatitis – 8-10 points

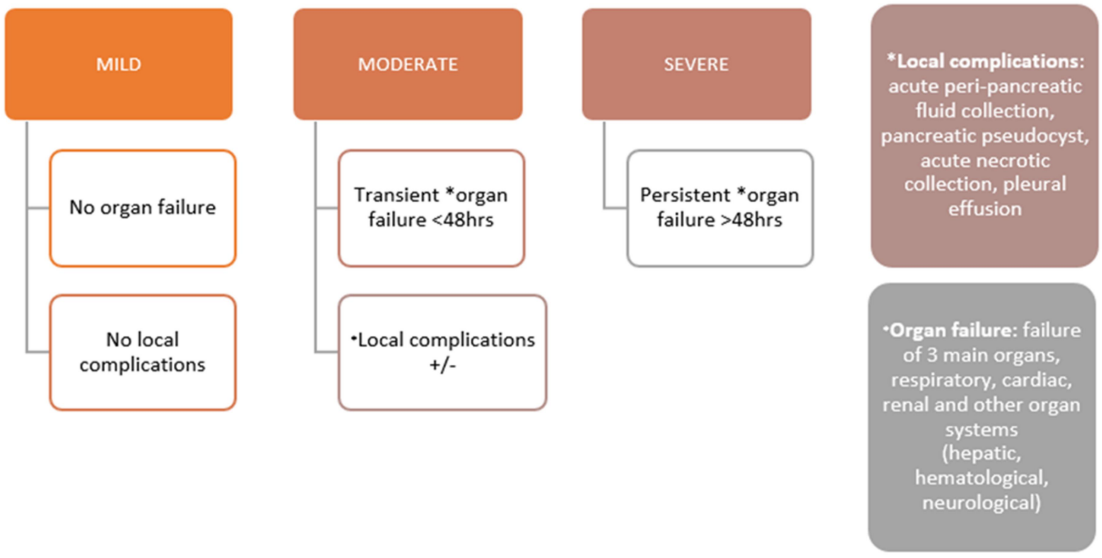


Figure 1: Classification of acute pancreatitis according to the 2012 revised Atlanta criteria

DISCUSSION

Here in this report, we have seen how effective NLR is in assessing the severity of acute pancreatitis. Various other studies were done using different clinical and radiological scoring system to analyse prognosis and to diagnose acute pancreatitis **[5-7]**.

Acute pancreatitis presents with severe abdominal pain (radiating to back), nausea and vomiting. Most common causes are alcohol consumption and gallstones **[8-10]**.

This study included all cases of acute pancreatitis with age group between 18 to 75 years, and who has undergone CECT abdomen and pelvis at least 72 hours after admission during the period July 1, 2021 to September 30, 2021, admitted in our hospital. Revised Atlanta classification was considered as the gold standard and comparison between MCTSI and NLR was done. NLR was calculated using CBC done at the time of admission and MCTSI **(Table 2)** was calculated after CECT was performed. Later patients were classified based on the revised Atlanta classification **(Figure 1)**.

CTSI and MCTSI are widely used radiological scoring systems.

MCTSI is more sensitive in categorizing moderate-to-severe disease **[5, 7]**. NLR is a vital marker. It can be used as a prognostic marker in various diseases as it can be measured effortlessly **[11]**. NLR is raised in acute pancreatitis depending upon the disease severity and patients are classified based on it.All clinical and radiological scoring systems needs investigations which are expensive and time consuming, using NLR we can predict it early and with less cost. Thus there is no delay in outcome and disease severity.

CONCLUSIONS

From this study we could conclude that compared to MCTSI, Neutrophil to Lymphocyte is better in assessing the severity of acute pancreatitis along with the revised Atlanta classification.

On the basis of various results observed in our study, it can be said that NLR is a better parameter as it is inexpensive, easily available and less time consuming. This in turn helps in decreasing mortality and morbidity by evaluating the disease early and on time.

Acknowledgement

I am thankful to Mrs Rupali Salunkhe for secretariat help, Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra (India).

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