



Role of Platelet to Lymphocyte Ratio (PLR) and its Correlation with NIHSS (National Institute of Health Stroke Scale) for Prediction of Severity in Patients of Acute Ischemic Stroke

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Introduction

- Stroke or cerebrovascular accident is defined as an abrupt onset of focal neurological deficit that is attributable to vascular cause.
- It accounts for 80% to 85% of all cerebrovascular disease.
- Stroke is the second leading cause of death.
- Atherosclerosis plays a key role in the pathogenesis of stroke and inflammation is central in the initiation, progression and complications of atherosclerosis by mediating every stage of atheroma development.
- High platelet counts may increase thrombocyte activation and aggravate the release of inflammatory mediators.
- In contrast, lymphocytes exert anti-inflammatory response in atherosclerosis development.
- The advantage of platelet to lymphocyte ratio (PLR) is that it reflects the condition of

both inflammation and thrombosis pathways and is more valuable than either platelet or lymphocyte counts alone.

- High PLR as an inflammatory marker has been correlated with the poor prognosis in various diseases like Myocardial infarction, critical limb ischemia, end-stage renal failure, pulmonary embolism and various malignancies including breast, ovarian, pancreatic, hepatobiliary carcinoma and other solid tumors.
- Hence present study was done to find out the role of PLR (Platelet to lymphocyte ratio) in patients of acute ischemic stroke and correlating with NIHSS for predicting the prognosis.

Aim of the Study

- To determine the value of Platelet to lymphocyte ratio (PLR) in patients of acute ischemic stroke and correlate it with NIHSS score to predict the severity of stroke.

Materials & Methods

This was a prospective, observational study carried at GEMS hospital; department of General medicine, Srikakulam, India from November 2020 to June 2021 and follow up for 3 months.

Inclusion Criteria

- 1) All acute ischemic stroke patients who had symptom onset within 7 days.
- 2) Age >60 years.

Exclusion Criteria

- Hemorrhagic Stroke
- Venous Sinus Thrombosis
- Hepatic or Renal Disease
- Connective Tissue Disorders
- Autoimmune Disease, Sepsis
- Malignancy, Psychiatric Illness.

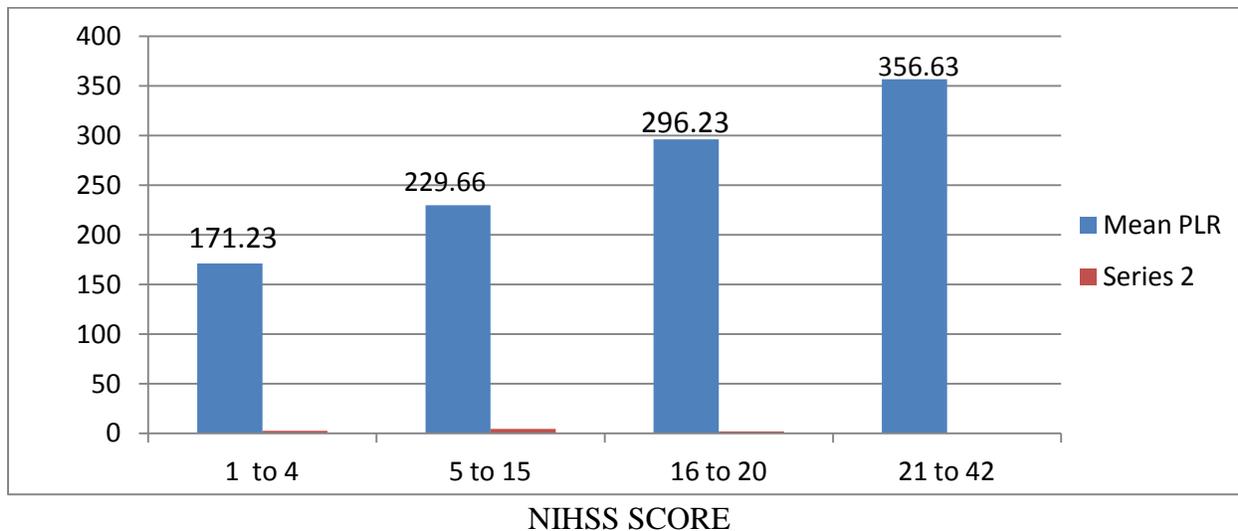
Statistical Analysis

- For descriptive statistical analysis, mean, standard deviation, and frequencies were calculated.

- Different characteristics were represented as numbers or percentage wherever required. Statistical analysis was done by statistical software SPSS for Windows v21.0
- *P-Value* shows statistical significance when it was < 0.05.
- Outcome – This study has shown that there was a positive correlation between platelet to lymphocyte ratio and National institute of health stroke scale (NIHSS) score.

Results

- In one year period total of 60 Acute Ischemic Stroke patients were identified.
- The mean age of the patients was 60years (30 males and 30 females)
- Comparison between with PLR and NIHSS score done at the time of admission and discharge.



Comparison of PLR according to NIHSS Score at the time of Admission

NIHSS	Total no.of cases	Improved	Detoriated	Static
1-4	20	15	2	3
5-15	15	9	4	2
16-20	15	9	4	2
21-42	10	4	4	2

Distribution of AIS patients according to clinical status in different NIHSS score group

Clinical status	No.of cases	PLR (Mean+/-SD)		t value	P value
		Admission	discharge		
Improved	37	242.27+/-75.14	167+/-57	5.904	0.0001
Deteriorated	14	263.42+/-108	346+/-125	2.494	0.016
Static	9	181.35+/-105	183+/-111	0.057	0.955

Discussion

- Our study included 60 patients of acute ischemic stroke and 60 age and sex matched control subjects.
- Maximum cases in the age >60 years.
- Hypertension was the most common risk factor detected in 64% of the patients followed by smoking (59%), dyslipidemia (48%), diabetes mellitus (31%) and alcoholism (27%).
- First study which was tried to correlate the value of PLR with NIHSS score both at the time of admission as well as discharge.
- In our study positive, moderately strong and statistically significant correlation was found between PLR and NIHSS score at the time of admission such that the value of PLR increased proportionately with the increasing NIHSS score.(p=0.0001) and (r=0.753).

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