ORIGINAL RESEARCH PAPER

General Medicine

AN ASSESSMENT OF PLATELET TO LYMPHOCYTE RATIO AND ITS CORRELATION WITH NIHSS(NATIONAL INSTITUTE OF HEALTH STROKE SCALE) FOR PREDICTION OF SEVERITY IN PATIENT OF ACUTE ISCHEMIC STROKE: IN A TERTIARY CARE HOSPITAL SOUTH GUJARAT.

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ABSTRACT

This study is to assess platelet to lymphocyte ratio (PLR) in patients of acute ischemic stroke and correlate it with NIHSS score to predict the severity of stroke.

INTRODUCTION

Stroke is the second most common cause of mortality and third most common cause of disability worldwide. Globally, 68% of all strokes are ischemic and 32% are hemorrhagic. Platelet activation and aggregation are critical in the pathogenesis of acute ischemic stroke. The platelet-to-lymphocyte ratio (PLR) is a new, affordable, available and composite biomarker of the inflammation in cerebrovascular disease that combines the prognostic value of single platelet and lymphocyte counts in the field of stroke. PLR has at least two advantages. One is that it is a comprehensive indicator that may contribute additional information to traditional markers. The other advantage is that it is a ratio and is thus more stable than a single blood parameter that can vary because of multiple factors such as overhydration, dehydration, and treatment of blood specimens.For complete assessment of a stroke patient it is recommended to use the NIH stroke scale. The NIHSS is the most commonly used neurological deficit rating scale, with a maximum score of 42 (hypothetical due to several mutually exclusive items). Its advantages include an accredited training and certification system, quick completion time (≤10 min) and facilitation of communication between team members. It may be used to monitor deficit severity, to identify neurological deterioration and to select patients for reperfusion therapy

STUDY DETAILS

Present prospective study conducted among 100 cases of acute ischemic shock diagnosed and admitted at the government medical college, Surat, Gujarat, India after ethical permission of IEC. Inclusion criteria was all Patient with acute ischemic stroke confirmed by history, neurological examination and imaging modalities within 7 days and patients with written informed consent with age above 18 years. Exclusion criteria was patients with hemorrhagic stroke and a previous attack of ischemic stroke, patients with comorbid medical illness likely to interfere with platelet function or morphology like chronic kidney disease, heart bypass surgery, chronic liver disease, leukemia, autoimmune diseases, venous sinus thrombosis, connective tissue disorder, sepsis, malignancy, psychiatric illness, patients receiving medications likely to interfere with platelet morphology or function like aspirin and other NSAIDS, antihistamines and some antibiotics and patients who refuse to give consent. Collected data has been entered in the excel data sheet and data analysis has been done with the help of Epi. Info.7.2 software.

Present study observed that 7%, 59%, 28% & 6% participants were belonged age group 75 years respectively. Mean age was 48.3 years with 14.8 SD. Study included 74% and 26% male and female participants respectively. Almost 71%, 65%, 30%, 63%, 61%, 23% participants have co-morbidity/risk factor like HTN, DM, Dyslipidemia, Smoking, Alcoholism, Previous Stroke respectively. Mean NIHSS score was 19.1 with 3.1 SD. Mean duration of stroke to admission in our hospital 18.6 hours to 6.4 SD.

Mean SBP was 154 mmHg with 14.6 SD and mean DBP was 82 mmHg with 6.2 SD. Mean Platelet, Lymphocyte (103 /uL), PLR, Neutrophils, NLR & HbA1c (%) was 245,85 103 /uL, 1.23 (103 /uL), 189.6, 4.3 /uL, 2.6, 6.1% respectively. The correlation between NIHSS score and PLR was 1.86 and it was statistically significant (p<0.05).

Highest number of participants belonged to 45 to 60 years age group and mean age was 48 years. Male:female ratio was 1:0.35. HTN and DM were the most common comorbidity/risk factor noted among the study participants. Mean NIHSS score was 19.1. Mean duration of stroke to admission in our hospital 18.6 hours. Mean SBP was 154 mmHg and mean DBP was 82 mmHg. Mean Platelet, Lymphocyte (103/uL), PLR, Neutrophils, NLR & HbA1c (%) was 245,85 103/uL, 1.23 (103/uL), 189.6, 4.3 /uL, 2.6, 6.1% respectively. The statistically significant positive correlation noted between PLR and NIHSS score

Table 1: Age distribution of study participants [N=100]

Age Group (in year)	Number	%
<45	7	7
45-60	59	59
61-75	28	28
>75	6	6
Mean ± SD		48.3 ± 14.8

Table 2: Gender distribution of study participants [N=100]

Gender	Number	%
Male	74	74
Female	26	26

Table 3: Comorbidities/risk factor distribution of study participants [N=100]

Comorbidities/risk factor	Number	%
HTN	71	71
DM	65	65
Dyslipidemia	30	30
Smoking	63	63
Alcoholism	61	61
Previous Stroke	23	23

Table 4: Mean NIHSS score of study participants [N=100]

NIHSS Score	Mean ± SD
	19.1 ± 3.1

Table 5: Distribution of participants according to 'duration of stroke to admission in hospital' [N=100]

Duration of stroke (in hours)	Mean ± SD
	18.6 ± 6.4

Table 6: Mean of SBP and DBP of study participants [N=100]

Parameters	Mean ± SD
SBP (mmHg)	154 ± 14.6
DBP (mmHg)	82 ± 6.2

Table 7: Laboratory Parameters of study participants [N=100]

Parameter	Mean ± SD
Platelet (10^3 /uL)	245,85 ± 85,94
Lymphocyte (10^3 /uL)	1.23 ± 0.6
PLR	189.6 ± 126.3
Neutrophils	4.3 ± 2.4
NLR	2.6 ± 1.1
HbA1c (%)	6.1 ± 1.3

Table 8: Correlation between PLR and NIHSS score among study participants [N=100]

Parameter	Correlation	P value
NIHSS score PLR	1.86	0.001

CONCLUSION

Present prospective study conducted among 100 cases of acute ischemic shock diagnosed and admitted at the government medical college, Surat, Gujarat, India to assess platelet to lymphocyte ratio (PLR) in patients of acute ischemic stroke, to measure the NIHSS score in patients of acute ischemic stroke, to determine correlation between Platelet to lymphocyte ratio (PLR) and NIHSS score in acute ischemic stroke.

Highest number of participants belonged to 45 to 60 years age group and mean age was 48 years. Male:female ratio was 1:0.35. HTN and DM were the most common co-morbidity/risk factor noted among the study participants. Mean NIHSS score was 19.1. Mean duration of stroke to admission in our hospital 18.6 hours. Mean SBP was 154 mmHg and mean DBP was 82 mmHg. Mean Platelet, Lymphocyte (10^3/uL), PLR, Neutrophils, NLR & HbA1c (%) was 245,85 10^3/uL, 1.23 (10^3/uL), 189.6, 4.3 /uL, 2.6, 6.1%

respectively. The statistically significant positive correlation noted between PLR and NIHSS score.

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