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Novel concepts on risk factors among patients with ischemic stroke

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ABSTRACT

Stroke remains a chief public fitness hassle in growing international locations. Routine investigation performed to pick out Stroke is imaging, that is luxurious and no longer easy. So we want an ordinary simple take a look at to predict stroke. To have a look at the association between platelet indices, platelet matter and Ischemic Thrombotic stroke. Platelets are small discoid cell factors which can be heterogeneous with admire to size, density, age and metabolic characteristic. The ordinary person human has a platelet be counted among 1—five-four lakhs/mm3. Platelet indices or platelet quantity parameters mainly include Mean Platelet Volume (MPV), Platelet Distribution Width (PDW) and Plateletcrit (PCT). Automated mobile counters have made the platelet matter and platelet volume indices - MPV, PDW and PLCR mechanically to be had in most scientific laboratories. The MPV shows the average length of the platelets and its ordinary extent is 7.4 -10.4fl. According to current research, large platelets are enzymatically and metabolically extra active and have better thrombotic potential compared with smaller ones. Hence individuals with high MPV are said to be at danger for thrombotic activities. The PDW is a measure of platelet anisocytosis. The PCT is the ratio of the volume of platelet cells to the entire amount of blood. Platelets and their interest have a Svital role inside the pathogenesis of coronary heart disorder. Some research has proven that decreases in platelet are counted can be a characteristic of the prothrombotic state in coronary heart ailment. This can be a result of platelet consumption in the acute segment of clot formation and next thrombosis.

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INTRODUCTION

Cerebrovascular sicknesses are becoming an increasingly vital hassle in developing nations. [1]

Platelets play a significant role in the formation of atherosclerotic plaque & the subsequent complications. The plate consists of fresh platelet-rich thrombi, platelet aggregation and adhesion, as well as fibrin deposition, are the fundamental factors in cerebrovascular disease. The platelets in circulation exhibit polymorphism. [2, 3] The more giant

platelets are more active and thereby can result in a prothrombotic state. [4]

To identify these highly reactive platelets, assessment of platelet count and platelet indices such as Mean Platelet Volume (MPV), Platelet Distribution Width (PDW) and Plateletcrit shall be helpful. [5]

In this article segment 2 clarifies the aspect of the correlated works. Segment 3 represents the materials and methods, segment 4 describes the particulars of the experimentations and deliberations. Lastly, segment 5 accomplishes the article by the allocation of our extrapolations and future strategies.

Related Works

Patients diagnosed with a stroke at the age of fewer than 40 years are called Young Stroke. [6] The reason for this special identification is pathophysiology. Young stroke differs from the usual pattern. It is not the common risk factors like diabetes, hypertension or dyslipidemia, resulting in a stroke. [7]

The percentage of young stroke is 15 to 25% in India according to study in All India Institute of Medical Science. Whereas in the Western world it is just 8.5% of all stroke.[8]Most common being cerebral venous sinus thrombosis, especially in young women on oral contraceptives or pregnancy. Another important cause is Takayasu's arteritis, distributed equally among the sexes. [8]

The invention of imaging techniques like Computed tomographic scan and Magnetic resonance imaging has revolutionized the management of stroke. The site of lesion, extent and pathology can all be described under one roof. With the latest advancement, even the mode of treatment can be decided. [9]

Usually, a Computed tomographic scan is used to rule out any haemorrhagic stroke. Even further details like oedema, tumour, midline shift can be assessed from a computed tomographic scan. It takes only a few minutes to make a CT scan. Therefore even the most difficult cases can be screened. [10]

Though CT scan had so many advantages, the invention of MRI has dethroned the supremacy of CT scan. MRI helps to identify the posterior cranial fossa lesion, size of lesion, depth and structures involved. The difficulty is it takes almost half an hour time. So the co-operation of the patient is an essential requirement. Prosthetic valves, any splints make it difficult to do. [11] With these fundamental tools, further addition of angiography and venography serves the diagnosis with near perfection. The nature of vessel walls, lumen, aneurysm, Arterio-

venous malformations, etc. can be identified [12]. The invention of spiral techniques gives much better clarity and output. Doppler studies study the vessels and help to localize the plaques. [13] Risk factors can be modifiable and non-modifiable. Age, Sex, environmental, ethnicity, Diabetes, Systemic Hypertension, smoking, dyslipidaemia, Heart disease, atrial fibrillation and conditions associated with a hyper-coagulable state [14, 15]. A review of the literature revealed several studies from India and across the globe showing a variation in the platelet count and platelet volume indices between patients with stroke and normal population.

MATERIALS AND METHODS

The study was conducted at MVJ Medical College and Research Hospital. This prospective Case-control study included 254 patients aged 18 to 95 years of age. Venous blood samples would be drawn at the time of admission before the initiation of treatment.

All blood samples processed within 30 minutes of blood collection using an autoanalyzer. Clinical history includes age, sex, history of presenting symptoms, history of diabetes, hypertension, dyslipidemia and similar previous episodes.

Clinical examination includes vitals, general test and detailed systemic analysis.

Investigations include

1. Complete hemogram

2. FBS, PPbs

3. Urea, Creatinine

4. Fasting lipid profile.

5. MRI and CT Scan Brain – Plain

The significance of platelet parameters was analyzed with study and control population with the help of AUROC and Youden Index analysis for statistical analysis.

RESULTS AND DISCUSSIONS

In this section focuses the results and discussions of this research work. The baseline clinical profile and laboratory values of the cases and controls are represented in the following section

From the Table 1 , the following interferences were made.

There was no significant difference in age groups between both the case and control groups p(0.071). A maximum number of cases were noted in the age group of 51-70 years, and the minimum number of

Table 1: Baseline Characters

	Parameter	Control N=127 n (%)	Case N=127 n(%)	P Value
Age Group	<30	4 (3.1)	7 (5.5)	0.07
	31-50	48 (37.8)	30 (23.6)	
	51-70	63 (49.6)	71 (55.9)	
	>70	12 (9.4)	19 (15)	
Gender	Male	93 (73.2)	95 (74.8)	0.775
	Female	34 (26.8)	32 (25.2)	
Diabetes	Present	109 (85.8)	113 (89)	0.449
	Absent	18 (14.2)	14 (11)	
Hypertension	Present	55 (43.3)	54 (42.5)	0.899
	Absent	72 (56.7)	73 (57.5)	
Dyslipidaemia	Present	25 (19.7)	32 (25.2)	0.292
	Absent	102 (80.3)	95 (74.8)	

cases were pointed out in the age group of fewer than 30 years.

There was no difference in gender distribution between cases and controls. P (0.775) Number of male cases outweigh female cases in the ratio of 3:1.

There was no difference in Diabetes, Systemic Hypertension and Dyslipidaemia between cases and controls p (0.449, 0.889, and 0.292 respectively). Among the circumstances, the most common risk factor was diabetic, followed by hypertension and dyslipidaemia patients.

AUROC shows, PDW with a sensitivity of 92.13% and 92.13% specificity at a cutoff point of >14 with a statistical significance of (P<0.0167)]. Platelet count with a sensitivity of 44.09% and 86.61% specificity at a cutoff point of $\leq$0.248 with a statistical significance of (P<0.0161)] then MPV with a sensitivity of 43.31% and 98.43% specificity at a cutoff point of >10.3 with a statistical significance of (P<0.0001)] and last, PCT with a sensitivity of 74.80% and 72.44% specificity at a cutoff point of $\leq$245 with a statistical significance of (P<0.0001)]

CONCLUSIONS

Finally, this work concludes that from the study, the reliable parameters in predicting stroke were found to be in the descending order of PDW > MPV > Platelet count > PCT. PDW being most specific.

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Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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