

**PLATELET INDICES IN PULMONARY TUBERCULOSIS.****POORANA PRIYA.P*¹ AND SUBHASHREE A.R²**

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ABSTRACT

Studies have highlighted the occurrence of Reactive thrombocytosis during the active phase of pulmonary tuberculosis. Role of platelets in inflammatory response is attributed as the cause. But very few studies have demonstrated changes in Platelet related indices in such cases. Hence we aimed to study the relation between platelet indices and an acute phase reactant, Erythrocyte sedimentation rate in newly diagnosed cases of pulmonary tuberculosis. Our study included a total of 150 newly diagnosed cases of pulmonary tuberculosis showing sputum positivity for mycobacterium tuberculosis. In such cases, platelet parameters were correlated with erythrocyte sedimentation values. We found statistically significant positive correlation between Plateletcrit and erythrocyte sedimentation rate in active cases of pulmonary tuberculosis.

KEY WORDS: Pulmonary tuberculosis, Thrombocytosis, Plateletcrit, platelet distribution width, mean platelet volume, Erythrocyte sedimentation rate.

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INTRODUCTION

Changes in platelet counts in the form of reactive thrombocytosis have been observed in active cases of pulmonary tuberculosis (1,2). In such active cases, the risk of morbidity and mortality is generally higher compared to patients on other treatment phases of tuberculosis. (2,3) Studies have correlated the increase in platelet counts with acute phase reactants. The importance of platelet parameters encountered in automated counters and change in values in the diagnosis of Pulmonary Tuberculosis has not been highlighted in many studies. We aimed to find out the correlation between platelet indices, namely, Mean platelet volume (MPV), Platelet distribution width (PDW), Plateletcrit (PCT) and an acute phase reactant, Erythrocyte Sedimentation Rate in newly diagnosed cases of Pulmonary Tuberculosis.

RESULTS

TABLE 1
BASELINE CHARACTERISTICS OF OUR STUDY CASES

Variables	Mean	Standard Deviation(SD)
Hemoglobin(g/dl)	13.2	2.0002
Red cell distribution width(%)	14.59%	2.159
White blood cell count(cu mm)	18,424	5605.36
Platelet count(cu mm)	457.19	102.68
Mean platelet volume(fl)	8.62	0.857
Platelet distribution width(fl)	18.24	1.714
Plateletcrit (%)	0.382	0.1512
ESR(mm,1hr)	70.87	30.000

ESR-Erythrocyte sedimentation rate In our study, out of 150 active cases of Pulmonary Tuberculosis, Males (62%) outnumbered Females(38%). All the cases were adults ranging from 18-60 years of age. Table 1 shows the baseline characteristics of parameters noted in our study cases of pulmonary tuberculosis. We found WBC (Mean=18, 424, SD=5605.5), Platelet counts (Mean=4.57, SD=102.68) to be higher.

MATERIALS AND METHODS

The study was approved by the institutional ethical and research committee of Sree Balaji Medical College and Hospital, Chennai. The study was conducted over a period of 2 years (2011-2013) in the Department of Hematology. A total of 150 newly diagnosed active cases of pulmonary Tuberculosis who were found to be sputum positive for Acid Fast Bacilli (AFB) were included in the study for whom 2ml of EDTA blood were taken. Complete hemogram including platelet counts and platelet indices were performed using fully automated hematology analyzer Mindray BC5380. ESR was performed using Westgren's tube method. The results were tabulated and analyzed using SPSS version 15.0.

Platelet parameters, Plateletcrit (Mean=0.382 SD=0.1512 and platelet distribution width (mean=18.24, SD=1.714) were also found to be higher compared to normal reference intervals for adult population. The mean platelet volume was found to be within normal limits (Mean=8.62, SD=0.857). ESR values interpreted in first hour were also higher with mean and SD of 70.87 and 30.000.

TABLE 2
CORRELATION TABLE FOR PLATELET COUNTS, PLATELETCRIT and ESR

Variables	Pearson correlation	p-value
Platelet counts and ESR	0.840	0.01*
Plateletcrit and ESR	0.775	0.01*
PDW and ESR	0.382	0.75

PDW-Platelet Distribution Width , ESR-Erythrocyte Sedimentation Rate
* Statistically significant p value <0.05

Table 2 represents the correlation table using Pearson product –moment coefficient of correlation for platelet parameters and ESR. There is statistically significant positive correlation ($r = 0.840$) between platelet counts and ESR with p-value of 0.01. The correlation between Plateletcrit and ESR also showed significant positive correlation ($r = 0.775$) with statistically significant p-value of 0.01. There is weak positive correlation ($r = 0.382$) between Platelet distribution width and ESR with p-value of 0.75

Figure 1
Scatter diagram showing positive correlation between Plateletcrit and ESR values in active cases of Pulmonary Tuberculosis

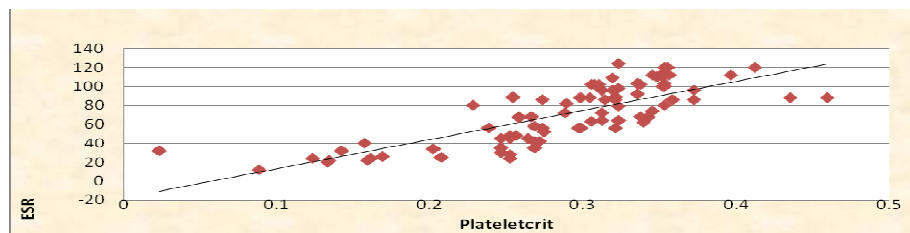


Figure 1, displays a scatter diagram showing Positive correlation between Plateletcrit and ESR values in active cases of pulmonary tuberculosis with mean Plateletcrit and ESR of 0.382 and 70.87.

DISCUSSION

The association between Pulmonary Tuberculosis and reactive thrombocytosis has been analyzed in various studies (1,2,3). In this study, we correlated the platelet parameters with acute phase reactant ESR newly diagnosed cases of active TB. Our study showed a male preponderance similar to the studies carried out by Tozkoparan et al (1). We found thrombocytosis in 70.6% of the total active cases of pulmonary tuberculosis. WBC, ESR values were also higher (Table 1) when compared to normal reference intervals which is consistent with other studies (3,4,5). Few other studies have correlated Albumin levels with ESR in cases of Tuberculosis (5,6,7) Furthermore the increase in platelet counts was correlated with increase in ESR values. (Table 2). Platelet indices such as plateletcrit, platelet distribution width were found to be higher, but Mean platelet volume

was found to be within normal limits. We found statistically significant positive correlation between plateletcrit and ESR.(Table 2 and Figure 1).Platelet distribution width showed weak positive correlation with ESR(Table 2).

CONCLUSION

We found statistically significant positive correlation between Plateletcrit and acute phase reactant ESR in cases of active TB. This stresses the role of platelet parameters and its changes in active cases of Pulmonary Tuberculosis with associated reactive thrombocytosis. Plateletcrit which is the measure of total platelet mass can be considered clinically as an useful screening tool along with other acute phase reactants in diagnosing active cases of pulmonary tuberculosis.

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