

## **Evaluation of NLR and PLR in immune thrombocytopenic purpura: Is it worth doing?**

**Aisha Arshad\***, Samina Naz Mukry and Tahir Shamsi

National Institute of Blood Disease & Bone Marrow Transplantation, Pakistan

**Background:** Immune Thrombocytopenia (ITP) is an autoimmune disorder. Besides platelets counts, Immature Platelets Fraction (IPF) can be used as tool to predict megakaryocytic activity in ITP patients. The clinical biomarkers like Neutrophils to Lymphocytes Ratio (NLR) and Platelet to Lymphocytes Ratio (PLR) predicts inflammation and can be used as prognostic markers. The current study was planned to evaluate utility of NLR and PLR in ITP diagnosis and their association with disease prognosis and response to treatment.

**Methods:** A case control study (1:1) was conducted from January 2015 to December 2017 with 111 ITP patients and 111 healthy controls. ITP patients were grouped as newly diagnosed ITP, persistent ITP, chronic ITP and refractory ITP patients. Peripheral blood was collected and complete blood profile parameters were recorded using Sysmex XN 1000. The calculation of NLR and PLR was done using absolute value of neutrophils, lymphocytes and platelets counts. The significant ( $p < 0.05$ ) difference between ITP patients and healthy control groups was determined by Kruskal wallis test, Dunn's test and spearman's correlation test was done to evaluate platelet count correlation with IPF using SPSS ver.23.

**Results:** Low hemoglobin and platelet counts with high Total Leucocyte Count (TLC) and IPF were detected in ITP patients as compared to healthy individuals ( $p < 0.05$ ). Among all groups of ITP patients, very low platelet count with median and IQR of  $2(3.8)3 \times 10^9/l$  with highest mean and IQR IPF 25.4(19.8)% was observed in newly diagnosed ITP group. The NLR was high with prognosis of disease as higher levels were observed in P-ITP. The PLR was significantly low in ND-ITP, P-ITP, C-ITP, R-ITP and compared to controls with  $p < 0.001$  as platelet were less in number in all ITP patients.

**Conclusion:** The IPF can be used in evaluation of bone marrow response in ITP. The simple, reliable and calculated NLR and PLR ratios can be used in predicting prognosis and response to treatment in ITP and to some extent the severity of disease.

**Keywords:** Immune thrombocytopenic purpura (ITP), Neutrophil to lymphocytes ratio (NLR), Platelet to lymphocytes ratio, (PLR), Immature platelet fraction (IPF).