

ABSTRACT: PREVALENCE AND CHARACTERISATION OF PLATELET ALLOANTIBODIES IN HEMATOLOGY PATIENTS REFRACTORY TO PLATELET TRANSFUSIONS – EXPERIENCE FROM A TERTIARY CARE CENTRE IN SOUTH INDIA

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Objective: To study the prevalence of platelet alloimmunisation and to characterize the platelet alloantibodies in hematology patients refractory to platelet transfusions in an Indian setting.

Methodology: 80 Patients with hematological disorders, and a prior history of multiple transfusions (minimum of 5 cellular transfusions) were included in the study, when they did not achieve an adequate platelet increment within 24 hours of the present platelet transfusion. Patients with non immunological causes of platelet refractoriness (sepsis, splenomegaly, bleeding, fever and auto immune thrombocytopenia) and on drugs producing antiplatelet antibodies were excluded. The test was done on 4 ml of blood sample in EDTA if the patient met the above inclusion criteria and was found to be refractory to the platelet transfusion which was assessed on the basis of the corrected count increment (CCI). An informed consent was taken from each patient to perform the test after clearly describing the purpose of the study. Plasma was separated and stored at -80°C and underwent batch testing in PAK- 2LE kit which is a qualitative solid phase enzyme linked immunosorbent assay (ELISA) designed to detect IgG antibodies to HLA class I antigens and to epitopes on the platelet glycoproteins IIb/IIIa, Ib/IX and Ia/IIa. The categorical variables were analyzed with the Chi- square test and the continuous variables with Kruskal-Wallis and Mann- Whitney U tests. P values ≤ 0.05 were considered to be significant.

Results and Conclusion:

The prevalence of platelet alloantibodies in our study was 60%. Of the 48 patients who were positive for platelet antibodies, the combination of anti-HLA and HPA antibodies together constituted the majority of 54.2%. Anti- HLA antibodies alone contributed to 31.25% and antibodies to HPA alone contributed to 14.6% of the positive results. The distribution of HPA antibodies was as follows- majority of antibodies were positive for GpIIb/IIIa (47.91%) followed by GpIa/IIa (29%) and the least for GpIb/IX (23%). The overall prevalence of anti-HLA antibodies was 51.25% and of anti-HPA antibodies was 41.25%. This is in contrast to all previous where the prevalence of antibodies to HPA antigens was generally less than 10% except for the Nigerian study on antenatal women which reported a similar prevalence of 41% for HPA antibodies. ABO incompatibility impacted significantly on platelet refractoriness in the non alloimmunized group ($p=0.004$). Against the background of HLA matched platelets, being the standard of care for patients with platelet refractoriness, the significant contribution of HPA antibodies in our study highlights the importance of screening for the same and subsequent incorporation of relevant measures into the management strategy of these patients.