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Detection of Anti-A and Anti-B Haemagglutinin Titre in Blood Group O Donor Plasma and its Correlation to Donor Age and Gender

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Background: Though the blood group O donors are considered as the universal donors, their plasma contain both types of antibodies named anti-A and anti-B. These antibodies can cause Acute Haemolytic Transfusion Reactions (AHTR) due to passive transfer of antibodies. These antibodies can be detected using titration techniques.

Objectives: To detect the anti-A and anti-B haemagglutinin titre in blood group O donor plasma and find its correlation to donor age and gender.

Methods: A cross-sectional analytical study was performed with 132 blood group O donors (44.6% females and 55.3% males). Samples were categorized into four groups according to age: 18-28, 29-38, 39-48 and 49-55 years. Samples were analysed using standard tube technique. Titers of 1:64 or higher was considered as the high titre, for anti-A and anti B. Titers of ≤32 was considered as low titre. Statistical analysis for the correlation between titre and donor age and gender (Spearman's correlation coefficient) was conducted using SPSS version 25.0.

Results: Overall, 45.5% of O donors had high antibody titres. Among them, the highest titres were observed in age groups between 18-28 and 29-38. Antibody titre levels were considerably low in older age groups (39-48 and 49-55). There was a statistically significant strong negative correlation (r=-0.733, p<0.01) between donor age group with anti-A titre and with anti-B titre (r=-0.756, p<0.01) among male donors. The above correlation in female donors was negative [anti-A titre (r=-0.235, p=0.073) and anti-B titre (r=-0.331, p=0.01)], but not as strong as observed in male donors.

Conclusions: Results show that only selected low titre O donor blood products can be used for safe transfusions during non-specific ABO transfusions. It is recommended to do more studies with higher number of samples to draw further conclusions.

Keywords: *Acute haemolytic transfusion reaction, Haemagglutinin titre, Titration techniques*