CORRESPONDENCE

Significance of Adopting a Sensitive Technique for Donor Antibody Screening

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Immunohematology is an integral part of transfusion medicine. In the past few decades, significant efforts have been made to detect as many irregular antibodies as possible in both transfusion recipients, pregnant mothers and blood donors. Traditionally antibody screening was performed with conventional tube technique (CTT), which was considered the gold standard. With advances in hemagglutination techniques like column agglutination technique (CAT), antibody screening in blood donors has become easier. Antibody screening in blood donors is done to avoid adverse transfusion reactions in recipients of plasma transfusion like immune hemolysis which can occur in patients for whom large amount of plasma is transfused or in pediatric patients [1].

We conducted a prospective study on blood donor antibody screening from January 2013 to August 2014 at a Tertiary Care Hospital in Southern India. A total of 26,804 (Male: 25,575; Females: 1229) with a sex ratio of 21:1 donated in our tertiary care transfusion center. Antibody screening was performed with CAT in antihuman globulin phase with commercially available pooled cells (ID Dia-Cell Pool of Bio-Rad Company). All positive samples were also screened using CTT using in-house pooled group O cells from 5 healthy donors. Antibody screening and identification was performed later with 3 cell and 11-cell identification panels (ID DiaCell I-II-III and ID-DiaPanel of Bio-Rad Company). Direct antiglobulin test (DAT) and

minor phenotyping of corresponding antigen in DAT negative donors was performed. All the samples were screened for transfusion transmissible infections and are negative for the same. Blood is collected from healthy donors after detailed interview and examination by a medical officer, henceforth assumed to be free from any sort of diseases.

Screening was positive in 15 (0.06 %) donors (14 males and 1 female) One of the 14 male donors was DAT positive with autoantibodies, while the rest were DAT negative with no history of transfusion and were classified to be having naturally occurring alloantibodies Females had higher prevalence (0.08 %) than males (0.05 %) for alloantibodies. Repeat screening of positive samples with CTT were negative. Frequencies of antibodies are shown in Table 1. Results were inconclusive for six donors, these antibodies may either directed against antigens, which were not mentioned in the antegram, or antibodies directed against indigenous antigens. All antibodies reacted at 37 °C implicating their clinical significance.

The prevalence of irregular antibodies among healthy donors in our study was comparable with Pahuja et al. (0.05 %) [2]. However other studies had higher prevalence 0.09–0.13 % [3, 4]. These differences in prevalence may be due to variation in the study population and techniques used for detection. In our study 1 in 1785 donors had clinically significant antibodies and none of the positive samples reacted in CTT. The possible reason could be the antibody levels are so low that cannot be picked up by conventional tube technique and increased sensitivity of CAT. As per Promwong et al. immune alloantibodies are detected twice as frequently when CAT was used compared to that of CTT (0.28 vs. 0.15 %). As stated by Bajpai et al. the sensitivity of CAT (90–94 %) is double when compared to CTT (~43 %) [5] Considering the higher

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Table 1 Specificity and frequencies of irregular antibodies in blood donors

Antibodies identified	Frequency (%)
Anti Lea	4 (26.5)
Anti Jka	1 (6.7)
Anti Kpa	1 (6.7)
Anti D	1 (6.7)
Anti M	1 (6.7)
Inconclusive	6 (40)
Autoantibody	1 (6.7)

prevalence of inconclusive antibodies in the present study, we may have to consider indigenous cell panels for better results. It is important to determine the specificity and clinical significance of these antibodies. Hence adoption of sensitive technique is essential to prevent adverse transfusion reactions, though it might give a few false positive reactions.

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