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2C-S05-04
RED BLOOD CELL ALLOIMMUNIZATION AMONG THE TRANSFUSION RECIPIENTS IN SANGLAH HOSPITAL DENPASAR BALI

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Background: Red blood cell alloimmunization is blood transfusion complication among the recipient. This is related to the frequency of antigen-positive blood transfusion received by the recipient as well as the genetic heterogeneity in populations. The immune response generated from the genetic differences between donor and recipient will induce the formation of alloantibodies. The impact of red blood cell alloimmunization for patients is the difficulty to obtain compatible red blood cells and higher risk of hemolytic transfusion reactions. Bali populations have little information about red blood cell alloimmunization.

Aims: The purpose of this study was to determine and analyze the characteristics of red blood cells alloantibodies in the recipient getting red blood cell transfusions in Sanglah hospital Denpasar Bali.

Methods: We performed a cross sectional study among adult recipients with a history of red blood cells transfusion at least 3 times and willing to participate in this study during the period of December 2016 to March 2017 in Sanglah hospital.

Results: A total of 40 recipients were studied in this subject. Red blood cell alloantibodies detected in 9% of recipients and all of them were multiple alloantibodies with specificity of anti-K antibodies (9%), anti-Kp° (9%), anti-E (2.5%), anti-Cw° (2.5%), anti-Lea (2.5%) and anti-Lu° (2.5%). Overall alloantibodies were detected in women aged 46-65 years.

Summary/Conclusions: This is the first study on red blood cell alloimmunization in Bali, and we found frequently anti-K and anti-Kp°, so it could be a consideration, especially in Bali to perform erythrocyte antigen phenotypes, especially Kell antigens and doing cross-match for Kell system to prevent alloimmunization. More data are needed to examine incidence of red blood cell alloimmunization in Bali.

2C-S05-06
ESTIMATING THE IMMUNOGENICITY OF PLATELET ANTIGENS AND DEDUCING THE PREVALENCE OF ALLOANTIBOIDS IN CHINESE

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Background: Platelet antigens and antibodies play important roles in several immune platelet disorders. The production of platelet antibody is determined primarily by antigenic immunogenicity and mismatching, but the immunogenicity of platelet antigens remains unclear to date. The data of platelet antibody, especially in China, are extremely lacking.

Aims: The aim of this study was to elucidate the immunogenicity of human platelet alloantigens (HPAs) and CD36 antigen, and deduce the prevalence of platelet antibodies in Chinese.

Methods: Literatures concerning prevalence of platelet antibodies in Caucasian were reviewed and analyzed. The allele or antigen frequencies of HPA-1 to 6bw, 15, 21bw, CD36 and other low-frequency HPAs (LFHPAs, regarded as one antigen here) of Caucasian and Chinese were collected to calculate mismatching possibility of each antigen. The relative and absolute immunogenicity of each antigen was estimated and normalized using HPA-1a antigen as a reference antigen. We defined relative and absolute immunogenicity of each antigen as 1.0, respectively (anti-HPA-1a production in 10.15% of HPA-1a-negative pregnancy, referred to Turner, Transfusion, 2005). The antibody prevalence in Chinese was deduced using the immunogenicity derived from Caucasian and antigen mismatching possibility of Chinese. The work was supported by National Natural Science Foundation of China (81570170) and Zhejiang High-Level Innovation Health Talents.

Results: The ranking of antibody prevalence in Caucasian was: 1a > b5 > b5a = CD16 > 15 > 21bw > 6bw > 3a > CD36 > 1a > CD65 > 3a > LFHPAs. The absolute prevalence of antibodies against 16 antigens was: 3.0E-3, 2.7E-1, 1.0E-3, 1.7E-2, 1.7E-2, 2.9E-2, 2.4E-2, 8.3E-3, 1.5E-3, 1.0E-3, 7.0E-2, 2.2, 9.2E-1, respectively. The absolute immunogenicity of each antigen equals the product of relative immunogenicity multiplied by 0.1015. The ranking of the immunogenicity of 16 antigens was: CD65 > 1a > HLFHPAs > b5 > b5w > 4b > b > b5a > 15 > 15a > 2b > 3b > 3b > 2a. The absolute prevalence of antibodies against 16 antigens in Chinese was: 2.1E-3, 9.2E-2, 9.8E-2, 1.1E-3, 6.6E-3, 7.9E-5, 1.2E-3, 9.1E-3, 1.2E-3, 1.1E-3, 2.5E-5, 1.2E-4, 6.2E-5, 1.5E-5, 6.4E-4, 1.5E-5, respectively. Total prevalence of platelet antibodies in Chinese was about 33% of that in Caucasian (0.0012 vs 0.0038).

Summary/Conclusions: The immunogenicity of 15 dominant platelet antigens and cumulative effect of LFHPAs was determined. HPA-4a and CD36 antigens showed stronger immunogenicity than HPA-1a, and antigens in HPA-13 and HPA-15 systems showed relatively weak immunogenicity despite their high heterozygosity. The expected prevalence of antibodies against 1a, 1b and 5a was obviously lower in Chinese than in Caucasian, but antibodies against 21bw, 4a, CD36 and 6bw presented an opposite trend owing to higher mismatching possibility in Chinese. The cumulative prevalence of all platelet antibodies was lower in Chinese than in Caucasian on account of difference in antigentic mismatching possibility.

2C-S06-01
APPLICATIONS FOR CODEKETES IN IMMUNOHEMATOLOGY

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Red cells used in immunohematology are mostly limited to those that nature provides. Very few techniques are available for adding new functionalities to cells, without affecting their intrinsic functionality or vitality. Kode Technology is a surface modification technology that uses amphiphatic function-space-liquid constructs, rapidly and harmlessly attach bioactive material to cell surfaces (creating kocytes) and non-biological surfaces (koded surfaces). Originally designed to attach blood group glycans onto red blood cells for quality control use, the technology has since expanded to the modification of any type of cell, enveloped virus, liposome and non-biological surfaces (including plastics, metals and glass). Today Kode Technology and the resultant kocytes are being used in a range of cell-based diagnostics, as powerful research tools, and most recently as a potential immuno-oncotherapeutic agent; soon to enter human trials. Immunohematology applications and opportunities to use the technology in the form of kocytes range from quality control kits, competency training panels, diagnostic reagents with synthetic realistic blood group antigens or infectious disease markers. The constructs can be used for solid-phase antibody mapping and also have potential as therapeutics, including in vivo neutralization of ABO antibodies. Together with a large range of BHD constructs Kode Technology remains the most extensive and easy to use technology for adding bioactive material onto the surface of cells for research and diagnostics.

2C-S06-02
DYE-BASED STRATEGY FOR RAPID BLOOD GROUPING

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The blood grouping techniques have been developed for over 100 years, yet no any approach for simultaneous ABO forward and reverse grouping is commercially available although great attempts had been delivered in improving these techniques. The main obstacle lies in the completely opposite analyses existed either on the surface of red blood cell (RBC) membrane or plasma. As a result, a centrifugation step is inevitable for the ABO reverse grouping to remove any red blood cells. In this report, a brand-new generation of rapid blood grouping system has been promoted by rapidly and conveniently observing the color changes induced by different blood types. If the blood with specific antigens is loaded, the preloaded antibodies would capture corresponding RBCs and only plasma could keep swimming to the terminal to react with the dye, following by a prompt naked-eye visible color change. Whereas, if O type blood (without specific blood type antigens) is present, the whole