Abstract

Neutrophil alloantigens are involved in a variety of clinical conditions including immune neutropenias, transfusion-related acute lung injury (TRALI), refractoriness to granulocyte transfusions and febrile transfusion reactions. In the last decade, considerable progress has been made in the characterization of the implicated antigens. Currently, seven antigens are assigned to five human neutrophil antigen (HNA) systems. The HNA-1a, HNA-1b and HNA-1c antigens have been identified as polymorphic forms of the neutrophil Fc receptor IIIb (CD16b), encoded by three alleles. Recently, the primary structure of the HNA-2a antigen was elucidated and the HNA-2a-bearing glycoprotein was identified as a member of the Ly-6/uPAR superfamily, which has been clustered as CD177. The HNA-3a antigen is located on a 70-95 kDa glycoprotein; however, its molecular basis is still unknown. Finally, the HNA-4a and HNA-5a antigens were found to be caused by single nucleotide mutations in the a M (CD11b) a L (CD11a) subunits of the leucocyte adhesion molecules (B 2 integrins). Molecular and biochemical characterization of neutrophil antigens have expanded our diagnostic tools by the introduction of genotyping techniques and immunoassays for antibody identification. Further studies in the field of neutrophil immunology will facilitate the prevention and management of transfusion reactions and immune diseases caused by neutrophil antibodies.

Keywords

Neutrophil antigens, blood transfusion, alloimmunization, transfusion reaction, neutropenia.