



Human Platelet Antigen (HPA) and Human Neutrophil Antigen (HNA) and Their Clinical Significance



Chapter summary

- Platelets and granulocytes have unique antigens (HPA and HNA respectively) on their surface.
- The advent of biochemical and molecular analysis of glycoproteins on platelets and granulocytes has enabled the elucidation of the HPA and HNA systems and provided investigative procedures for antigen typing and antibody detection.
- Many of the techniques developed differ from those used in red cell immunohaematology laboratories because of the different biologic and antigenic characteristics of platelets and granulocytes.
- HPA and HNA give rise to immunological responses which typically result in either thrombocytopenias or neutropenias respectively, although, in some cases, more systemic pathology can also be initiated, for example TRALI.
- The clinical conditions caused by HPA and HNA antibodies are largely well-characterized but there remain areas of uncertainty, for example assessing the clinical significance of these antibodies, the optimal antenatal management of NAIT, and the precise mechanism and reasons for susceptibility to TRALI.

- Advances in technology have led to improved treatment options for many of the clinical problems caused by immune responses to HPA and HNA, for example the provision of HPA selected platelets and use of IVIgG in NAIT and the use of GCSF in the treatment of the more severe cases of NAIN and autoimmune neutropenia.
- The interplay between clinical observation, for example isolated cytopenias in a neonate or following transfusion, and development of technological advances in the laboratory have been crucial in improving the treatment of these conditions and increasing understanding of the immunopathology of these disorders.
- The link between antigens, immune response, and biological function of target molecules has had significance for the understanding of the basic biology of platelets and granulocytes.