008. Propensity for alloantibody formation in transfusion-dependent patients

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A collection of single nucleotide polymorphisms (SNPs) within immunological genes and signalling pathways derived from gene chip screening proved useful in predicting anti-D immunoglobulin production for RhD-immunised healthy blood donors (Tan et al., 2015). It is uncertain whether these same SNPs could have predictive value for patients that may receive antigen-incompatible blood transfusion. We hypothesise that these identified genetic factors could be useful for predicting alloantibody formation in transfusion-dependent patients. Opportunities to conduct such studies are limited; patients are not deliberately transfused with non-self antigens. However, in the course of transfusion support to patients requiring red cells, patients may receive phenotype mismatched units. Regular transfusion patients (n=47) at a Sydney metropolitan hospital were assigned a Responder or a Non-Responder profile based on their alloantibody/autoantibody status. Older Thalassaemia patients were more likely to have developed antibodies than their younger counterparts (p value = 0.033). DNA was extracted from Thalassaemia patients (n=42) and genotyped for target SNPs and their predicted Responder profile generated using our predictive model. Responder Thalassaemia patients were significantly associated with 3 SNPs (TSLP, p value = 0.002; IGF1R, p value = 0.033; BLNK, p value = 0.007). The predictive model predicted 15 Thalassaemia patients currently assigned as a Non-Responder based on their alloantibody/autoantibody status as likely to be Responders. This could indicate that these 15 Thalassaemia patients have a higher propensity to develop alloantibodies, and so should continue to receive fully matched phenotyped red blood cell transfusions. Longitudinal follow up of these patients may determine if the predictive model was accurate.

Tan, J.C.G., Armstrong, N.J., Yuan, F.F., Flower, R.L., Dyer, W.B., 2015. Identification of genetic polymorphisms that predict responder/non-responder profiles to the RhD antigen. Molecular Immunology 68, 628-633.