

ABSTRACT

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Title of diploma thesis: RhD antigen screening by molecular genetic methods

This thesis deals with the genotyping of weak and partial antigens using molecular genetic methods. The main aim is to evaluate the rate of the representation of individual types of variant and weak RhD antigens in first-time blood donors, patients and pregnant women. Testing took place at the Transfusion Department of University Hospital Hradec Králové between October 2015 and February 2019. The PCR-SSP method was used for *RHD* genotyping using commercially supplied BAGene SSP kits from BAGene Health Care. The study includes 32 samples from first-time blood donors in the reference period to determine the specific type of RhD antigen, and 188 samples from patients and pregnant women, for whom serological methods could not be used to unequivocally identify the RhD antigen. For all pregnant women, moreover, the genotyping result was a factor in determining whether to administer anti-D immunoglobulin.

This *RHD* genotyping for all serologically ambiguous samples has made it possible to determine a specific type of partial or weak RhD antigen.

In the donor group, the weak RhD antigen was detected in 1.12 % of cases of the total number of examined blood donors. Among patients, the weak RhD antigen was detected in 0.97 % of the samples and partial RhD antigen in 0.02 % of the patients out of the total number of those examined during the reference period.

All genotyping results have been summarized and graphically compared and evaluated at the conclusion of this thesis.

Keywords

Rh system, RhD antigen, RhD antigen testing, molecular genetic methods