

IMPORTANCE OF RHD ZYGOSITY DETERMINATION AS THE PROGNOSTIC VALUE FOR TARGETED RhD IMMUNOPROPHYLAXIS

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Background: It became clear that a small number of RhD-negative women carrying an RhD-positive fetus continued to be immunized despite the administration of hyperimmune anti-D IgG after delivery, leading to the modification of this program, by giving one or two doses of hyperimmune anti-D IgG in the third trimester of pregnancy, with the addition of one dose after the birth of an RhD-positive child. Since in this practice the RhD status of the fetus is unknown, hyperimmune anti-D IgG is given to all RhD-negative pregnant women despite the fact that about 35-40% of these women carry an RhD-negative fetus.

Methods and Objectives: Literature review has been performed with the objective to assess the importance of RHD zygosity determination for targeted RhD immunoprophylaxis.

Results: RhD-negative pregnant woman, whose partner is RhD-positive hemizygous, has a 50% chance of having an RhD-positive child. The established frequency of RHD hemizygotes is about 56 % for Caucasians, but it is recommended that each country determine its own frequency. RhD immunoglobulin product of human origin, whose resources are limited and depend on the number of donors undergoing active hyper immunization, is considered to have a potential risk of transmission of pathogens or infectious agents and therefore, from an ethical point of view, should be used only when it is necessary.

In Serbia, such data do not exist, as well as data on the prevalence of hemolytic disease of the fetus and newborn in RhD incompatible pregnancies. In Blood Transfusion Institute of Serbia, determination of the zygosity of the RHD locus is implemented for all serologically RhD-positive partners. The test is based on qPCR technology. An analysis of the presence of exon 1 and exon 10 sequences of the RHD gene is performed, and the testing is performed in quadruplicate.

Conclusions: Determining the RHD zygosity of the RhD-positive father in RhD incompatible pregnancies is valuable information, when the mother is RhD-negative and it is necessary to assess whether she is carrying an RhD-positive child.

Keywords: zygosity, RHD, determination, immunoprophylaxis