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Anti-RH1 in a Patient with Weak RH1 Type 2 Genotype: A Case Report

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Background

Most weak RH1 phenotypes in Caucasians express types 1, 2, or 3 and can be managed safely as RH:1 not posing alloanti-RH1 risk. We report a case of a 102-year old woman, serotyped RH:-1 by routine methods a decade ago. Concurrently, anti-RH1 and -RH2 antibodies were detected in her serum, with anti-RH1 also eluted from erythrocytes. Recent testing revealed persistent anti-RH1 ab in the eluate in the confirmed absence of any prior transfusion, prompting doubts concerning its character.

Methods

Standard serological methods were used for direct antiglobulin test (DAT) and antibody specification in serum and eluate, including an in-house DTT treated panel and rare test cells (RH:1,-12). Elution was performed using an in-house cold acid elution technique. Different monoclonal IgM and IgG anti-RH1 were applied to ascertain the RH1 status (BioRad, Cressier; Medion Grifols Diagnostics, Duedingen, CH), including the more sensitive anti-human globulin (AHG) method (Werfen, Dreieich, D). Due to insufficient material autologous adsorption was not feasible. Genotyping was performed by PCR-SSP (inno-train GmbH, Kronberg i. T., DE).

Results

In the current sample, routine RH phenotyping was consistent with the previously ascertained RH:-1,-2,3,4,5 serotype. A positive DAT (IgG 2+) made the more sensitive AHG approach, routinely applied to all RH:-1 samples, unfeasible. Antibody differentiation confirmed the presence of the two previously identified RH antibodies, anti-RH1 and -RH2, with anti-RH1 notably discernible in the eluate (3+ reaction in both indirect antiglobulin test and on papain treated

cells). The potential specificity anti-RH12 was ruled out using rare test cells. Genotyping revealed the presence of weak RH1 type 2, thereby elucidating the observed anti-RH1 antibody as an auto-antibody, remarkably, in an individual with RH1 negative serotype.

Conclusion

Serological reactivities of red blood cells expressing weak RH1 type 1 to 3 can vary significantly, ranging from 4+ to negative. Here we describe a case with supposedly RH:-1, initially presumed to possess an allo-RH1. However, a positive DAT together with the presence of anti-RH1 in the eluate and absence of recent transfusions all indicated an autoantibody, finally confirmed by a weak RH1 type 2 genotype.