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LETTER TO THE EDITOR

Successful transfusion care for a patient with the Rhesus -D- phenotype and antibodies against Rh17 and two additional alloantibodies

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Dear Editor,

In transfusion medicine, it can be a challenge to obtain compatible blood for patients who have clinically important alloantibodies to high-prevalence antigens. We describe a case which examples the decision process for autologous blood deposition in the Dutch health care system.

In September 2006, a 56-year-old man was admitted to the emergency room after a serious accident. Coagulation and hematology parameters were in normal range except for a low hemoglobin of 7.9 g/dL. His blood group was determined as O, Rhesus D-positive and antibody screening (DiaMed) was negative. Transfusion anamnesis was also negative. Two units of packed erythrocytes were administrated. Eight days later hemoglobin had dropped to 7.1 g/dL. Upon a negative antibody screening, 2 units of erythrocytes were transfused. After 20 days, the patient had to undergo surgery. Now, antibody screening and identification, using standard and papain enzyme-treated panels (DiaMed), demonstrated strong positive reactions with all cells. These results were suggestive for the presence of an alloantibody against a high-prevalence antigen. Further serologic and genetic analysis revealed that C/c and E/e antigens were completely absent on the surface of the patient's erythrocytes, indicating the presence of the rare -D-/-D- phenotype [1]. Adsorption and elution studies revealed the presence of anti-C, -E, -e, -Ce, and -cE alloantibodies and antibodies against the high-prevalence antigens of the RhCcEe polypeptide (anti-Rh17 antibodies) [2]. Furthermore, we identified alloantibodies against Jk^a and Le^a.

Hemolytic transfusion reactions due to anti-Le^a are rare [3]. Anti-Rh17 [4] and anti-Jk^a antibodies, however, can lead to massive hemolysis. Therefore, only erythrocytes of donors with the -D- phenotype, negative for Jk^a, could be selected for transfusion. The -D- haplotype is rare, ranging in frequency from 0.0005 in Sweden [5] to 0.0032 in Japan [6], and homozygosity for RHCE-D-CE hybrid genes appears to account for several examples of -D- [1]. Worldwide, only two suitable donors were registered. Since the risk of substantial blood loss was low, the patient underwent surgery in the absence of compatible donor erythrocytes. The patient was encouraged to donate autologous blood to be stored at the Sanquin Bank of Frozen Blood (SBFB). In November 2009, the patient was scheduled for coronary artery bypass graft surgery. It was estimated that, by optimal use of intraoperative cell salvage, the patient would maximally need 1 unit of blood. Five weeks before surgery, the patient's hemoglobin was 15.1 g/dL, allowing preoperative donation of 2 units of fresh blood. In case of need, frozen units of the SBFB could also be

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thawed. During surgery in December 2009, 1 unit of fresh autologous blood and 400 mL of cell salvage blood was transfused to the patient. Postoperatively the patient's hemoglobin level was 11.1 g/dL. He was discharged from the hospital 9 days later.

To date the clinical relevance of the -D- phenotype has been predominantly described in pregnant women, causing mild to fatal hemolytic disease of the newborn [4, 7–10]. We describe the successful treatment of a patient with recurrent need of transfusions despite the presence of antibodies against the high-prevalence antigens of the RhCcEe polypeptide combined with anti-Jk^a.

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Conflict of interest The authors declare to hold no conflict of interest with the publication of the results included in this manuscript.

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