A pregnant woman with anti-Gregory antigen: case report

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Summary

Negative Gregory antigen (Gy(a-)) remains an extremely uncommon blood phenotype. We describe a 32-year-old pregnant woman with (Gy(a-)) and anti-Gregory antigen (anti-Gy^a). There was no evidence of consanguineous mating in her family. Blood typing study revealed that only her father was Gy(a-) among the family. Anti-Gy^a had a titer of 16 before pregnancy, but increased to 1,024 at 33 weeks of gestation with a titer of 512 at 34 weeks. Her own blood stores were collected starting at 14 weeks, amounting to 1,800 g totally. She underwent an emergency cesarean section at 35 weeks due to a non-reassuring fetal status. Blood loss was approximately 1,090 g. Cord blood type was found to be Gy(a-). The indirect Coombs test of cord blood was positive, while the direct Coombs test was negative. No neonatal hemorrhagic disease developed. The storage of a sufficient amount of crossmatch-compatible Gy(a-) blood during pregnancy is important in case of possible need of blood transfusion at delivery for women with anti-Gy^a.

Key words: Gregory antigen; Hemolytic disease of the newborn; Pregnancy.

Introduction

Gregory antigen is a high frequency antigen [1]. However, negative Gregory antigen (Gy(a-)) remains an extremely uncommon blood phenotype, and crossmatch-compatible blood donors are difficult to obtain. We describe an uncommon case of a 32-year-old pregnant woman with Gy(a-) and anti-Gregory antigen (anti-Gy^a).

Case Report

The patient was a 32-year-old pregnant woman, gravida 1, para 0, abortus 1, with no past history of blood transfusion. She underwent artificial abortion at 29 years of age. On ABO typing, RH typing, and antibody screening at 23 years, the patient's red blood cells were typed as blood type 0, D-positive, and Gy(a-). There was no evidence of any consanguineous marriage in her family. A blood typing study revealed that the father was blood group 0 and Gy(a-), the mother was blood group 0 and positive Gregory antigen (Gy(a+)), and both her sister and brother were blood group 0 and Gy(a+), respectively. Her husband was blood group A and Gy(a+). She conceived spontaneously at 32 years. Anti-Gy^a had a titer of 16 before pregnancy, but increased to 1,024 at 33 weeks of gestation with a titer of 512 at 34 weeks of gestation. Repeated ultrasound demonstrated no findings of fetal hydrops. Since crossmatch-compatible blood donors were unavailable, the patients's own blood was collected starting at 14 weeks of gestation due to the possible need of a blood transfusion during delivery. The total volume of self-blood in storage amounted to 1,800 g. Her antenatal course was uncomplicated until 35 weeks of gestation, when she underwent an emergency cesarean section due to a non-reassuring fetal status. She delivered a 2,352 g male baby with Apgar scores of nine at one minute and nine at five minutes, respectively. Blood loss was approximately 1,090 g. She did not receive any blood transfusion. Cord red blood cells were typed as blood type 0 and Gy(a-). The indirect Coombs test of cord blood was positive, while the direct Coombs test was negative. No hemorrhagic disease of the newborn (HDN) developed. Maternal anti-Gy^a had a titer of 512 on the fourth postoperative day. She was discharged home on the ninth postoperative day.

Discussion

Gy(a-) individuals have been thought to be the products of consanguineous mating and presumably homozygotes for a rare gene, *Gy*, inherited from a common ancestor [2]. There were no reports suggestive of X-linkage [2]. In our patient, the familial study did not indicate any consanguineous marriages. A blood typing study revealed that only the father was Gy(a-) among her family members. She may have been sensitized at the time of artificial termination because she had never received a blood transfusion.

Clinical significance of anti-Gy^a isoimmunization remains to be elucidated due to the rarity. It has been reported that anti-Gy^a with low avidity and high titers weakly responds to heterozygotes, but transfusion of Gy(a-) individuals with Gy(a+) blood can cause transfusion reactions [1]. Ellisor *et al.* [3] described that due to the possibility of a delayed hemolytic transfusion reaction, Gy(a+) cells would have been given only if Gy(a-) cells were not available and the patient's red blood cell deficit was life-threatening. The storage of self-blood is necessary for Gy(a-) women during pregnancy for the possible need of a blood transfusion at delivery because of the difficulty in obtaining crossmatch-compatible blood. Since anti-Gy^a was of an IgG antibody [2, 3], Gy^a antigen was present on cord cells [1, 2]. However, no evidence of hemolytic disease of the newborn (HDN) has been reported in pregnancy with Gy(a-) and anti-Gy^a [1, 4], presumably because Gy^a antigen was poorly devel-

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oped at birth [4]. Actually, in our case, HDN did not develop.

In conclusion, the storage of a sufficient amount of crossmatch-compatible Gy(a-) blood during pregnancy is important due to a possible need of blood transfusion at delivery for women with anti-Gy^a.

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