CORRESPONDENCE

Incidental Discovery of Anti-IH in a Patient Planned for Caesarean Section and its Repercussions

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A 27-year-old pregnant woman, 37 weeks pregnant, tested positive during antibody screening at Maternity and Child Healthcare Hospital. She had one child born by caesarian operation and no history of transfusions. She was referred to our blood center to reserve blood for caesarean operation. The blood groups of her and her husband are listed in Table 1. At room temperature (RT), forward grouping was A₁B group with D positive. Reverse grouping results were negative for A cells, weak agglutination (w +) for B cells and 2 + agglutination for O cells. Autocontrol and direct antiglobulin (IgG + C3d) test were both negative. Antibody screening results of the commercially available panel (Sanquin, Makropanel 16, Lot: 8000236600) are showed in Table 1. Further investigation revealed that by immediate spin, the antibody was strongly reactive against A₂ RBCs but not against O and B cord RBCs, suggesting that it is anti-IH. In order to identify whether the plasma contains other specific antibodies, we randomly selected five donors' RBCs for each blood group of A, B and AB respectively and reacted with plasma: group AB donors' RBCs were negative and group A and B donors' RBCs were consistent with the agglutination intensity seen in reverse grouping. We treated the patient's plasma with 2-mercaptoethanol (2-ME) and no agglutination was seen in panel cells with saline and antiglobulin media. Cross-

match tests with seven randomly chosen group AB units were compatible with saline and antiglobulin media. Fortunately, caesarean operation was successful without blood transfusion and the child was healthy.

Anti-IH sensitizes RBCs only in the presence of both H and I antigens together. It is usually observed in the serum of group A₁B, A₁, and B. Anti-IH is generally considered to be a harmless cold autoagglutinin. However, several literatures [1–5] demonstrated that anti-IH may occasionally cause acute or delayed hemolytic reactions primarily mediating hemolysis of group O or A₂ donor RBCs rather than autologous cells. Group O and A₂ RBCs react best because they have the strongest expression of the H antigen. Group A₁ and A₁B RBCs have the least H antigen so they react weakly (O > A₂ > B > A₂B > A₁ > A₁B) [1]. Therefore, once anti-IH antibodies have appeared or if they were previously reported in the patient's history, ABO-identical matched RBC units should be used (avoid group O or A₂ RBC units for group A₁ patients and group O or A₂B RBC units for group A₁B patients). Also many I-related antibodies have been reported: anti-IA, -IB, -IAB, -IH, -iH, -IP₁, -I_TP₁, -IHLe^b, and -iHLe^b. Due to the close relationship of I to the biochemical structures of ABH, P, and Lewis antigens, one should not be surprised to find antibodies that recognize compound antigens.

In this case, the gravida's plasma was treated with 2-ME and no agglutination was found with panel cells with saline and antiglobulin media showed that only IgM antibodies were present. We accidentally found that the agglutination intensity of the plasma reacted with her husband's RBCs was stronger (2 +) than reagent B cells at RT by immediate spin. Thus, we concluded that the plasma likely contained other low-incidence IgM antibodies. Regrettably, more samples were not available for further testing.

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Table 1 Blood grouping of the couple and antibody screen result of this pregnant woman

	IS	-A	-B	-D	A ₁ cells	B cells	O cells	A ₂ cells	O cord	B cord	-A ₁	-H	-E	-e	-C	-c	-M	-N	-P ₁	-Le ^a	-Le ^b	-I
Husband	IS	-	4+	4+	4+	-	-	NT	NT	NT	-	2+	-	4+	4+	4+	4+	-	4+	4+	4+	3+
Wife	IS	4+	4+	4+	-	w+	2+	2+	-	-	4+	1+	4+	4+	4+	4+	4+	4+	-	4+	4+	3+
	4 °C	NT	NT	NT	1+	1+	4+	3+	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	37 °C	NT	NT	NT	-	-	w+	-	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
	Cell panel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16					
	IS	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+	2+
	37 °C	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+	w+

IS immediate spin at room temperature, NT not test

In summary, for patients with anti-IH, transfusions should use ABO-identical matched RBC units. Depending on electronic cross-match rather than conventional cross-match could place the patient at risk of being transfused with other subgroups unless the antibody screening is strictly evaluated.

Compliance with Ethical Standards

Conflict of interest There is no conflict of interest to declare.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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