ABO discrepancy #1

Case study by Jim Perkins, M.D. (© 2009)

Indian Immunohematology Initiative

History: This patient was a 72 year old man admitted 2 weeks earlier for hematochezia. He had a history of lower GI hemorrhage due to diverticular disease 20 years ago. He also had a history of hypertension, hyperlipidemia, and GERD. He used a large quantity of ibuprofen for control of pain in his shoulders and neck.

He had massive lower GI bleeding after admission and received 14 units of RBCs from the 2nd to the 7th day of hospitalization, the last unit being received 1 week ago. On the 4th hospital day (10 days earlier) his antibody screen was negative. His hematocrit was 25.6 and had not declined in the past 7 days.

ABO and Rh Typing

<A	<B	A1 cells	B cells	6% alb	<D	<D/AHG	CCC	Interp
0	4+	4+	3+		4+			?

Antibody Screen

	Gel
SCI	3+
SCII	0

Direct Antiglobulin Test (tube method)

	Poly	IgG	<C3
AHG	0		
CCC	2+		

Initial Panel

Lot# 8RA171		Rh system						Kell						Duffy		Kidd		Xg	Lewis		MNSs				P	Lutheran		Other Typings		
Cell	Rh	D	C	E	c	e	V	K	k	Kp^a	Kp^b	Js^a	Js^b	Fy^a	Fy^b	Jk^a	Jk^b	Xg^a	Le^a	Le^b	S	s	M	N	P1	Lu^a	Lu^b		Cell#	Gel
1	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	+	0	+	C^w	1	w+
2	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	+	+	+	+	0	0	+	0	+	0	+	+	0	+		2	0
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	+	+	+	0	0	+	+	+	+	0	+		3	w+
4	Ror	+	0	0	+	+	0	0	+	0	+	0	+	+	+	0	+	0	0	0	+	+	+	+	+	0	+		4	w+
5	r'r	0	+	0	+	+	0	0	+	0	+	0	+	+	+	+	0	+	0	+	0	+	+	+	+	0	+		5	0
6	r"r	0	0	+	+	+	0	+	+	0	+	0	+	+	+	0	+	+	+	0	0	+	0	+	+	0	+		6	0
7	rr	0	0	0	+	+	0	+	+	0	+	0	+	0	+	0	+	+	0	+	+	+	+	+	0	0	+		7	0
8	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	0	0	+	0	+	0	+	0	0	+	+		8	0
9	rr	0	0	0	+	+	+	0	+	0	+	0	+	+	0	+	0	0	0	+	0	+	0	+	+s	+	+		9	3+
10	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	0	+	0	0	+	+	+	+	0	0	+		10	0
11	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	0	+	0	0	+	+	0	0	+	+s	0	+		11	2+
Patient																													AC	

Selected cells

Lot #18920		Rh system						Kell						Duffy		Kidd		Lewis		P	MNSs				Lutheran		Xg	Other Typings		
Cell	Rh	D	C	c	E	e	V	K	k	Kp^a	Kp^b	Js^a	Js^b	Fy^a	Fy^b	Jk^a	Jk^b	Le^a	Le^b	P1	M	N	S	s	Lu^a	Lu^b	Xg^a		Cell#	Gel
1	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	+	0	0	+	0	+	+	0	+	0	+	+	Bg(a+)	1	0
7	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	0	0	+	+	0	+	0	+	0	+	+		7	0
8	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	0	+	0	0	+	0	+	0	0	+	+		8	0

ABO discrepancy #1

Saline Tube Panel (4 drops plasma) including one prewarmed test cell

Lot #23055		Rh system						Kell						Duffy		Kidd		Lewis		P	MNSs				Lutheran		Xg	Other Typings	Saline IAT; 4 drps plasma				Pre-warmed	
Cell	Rh	D	C	E	c	e	V	K	k	Kp^a	Kp^b	Js^a	Js^b	Fy^a	Fy^b	Jk^a	Jk^b	Le^a	Le^b	P1	M	N	S	s	Lu^a	Lu^b	Xg^a		Cell	IS	37^o	AHG	37^o	AHG
1	RZR1	+	+	+	0	+	0	0	+	0	0	0	+	+	+	0	+	0	+	0	+	0	+	+	0	+	0		1	0	0	0		
2	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	+	+	0	+	+	+	0	0	+	0	+	+	Sc:2, C^w	2	2+	0	0		
3	R2R2	+	0	+	+	0	0	0	+	+	+	0	+	+	0	0	+	0	+	+	+	0	+	+	0	+	+		3	3+	w+	vw+		
4	Ror	+	0	0	+	+	+	0	+	0	+	0	+	+	+	+	+	0	+	+	+	+	0	+	0	+	0	He+,St(a+)	4	3+	1+	vw+		
5	r'r	0	+	0	+	+	0	0	+	0	+	0	+	0	+	+	+	0	+	0	0	+	0	+	0	+	+		5	0	0	0		
6	r"r	0	0	+	+	+	0	0	+	0	+	0	+	0	0	+	+	+	0	+	+	+	0	+	0	+	0		6	4+	3+	3+	3+	2+
7	rr	0	0	0	+	+	0	+	+	0	+	0	+	0	+	0	+	0	+	0	0	+	0	+	0	+	+		7	0	0	0		
8	rr	0	0	0	+	+	0	0	+	0	+	0	+	+	0	0	+	0	+	+	+	+	+	0	0	+	+	Lu14	8	3+	0	0		
9	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	+		9	4+	2+	1+		
10	R1R1	+	+	0	0	+	0	+	+	+	+	0	+	0	+	+	+	0	+	+	+	+	0	+	0	+	+	Yt(a-)	10	4+	1+	w+		
11	R2r	+	0	+	+	+	0	0	+	0	+	0	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	Bg(a+)	11	4+	3+	2+		
12	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	+	+	0	+	0	+	0	+	0	+	0	I-	12	4+	1+	w+		
13	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	0	+	0	0	+	+	0	+	+	+	0	+	0		13					
14	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	0	+	0	0	0	+	0	+	0	+	0	+	+		14					
15	rr	0	0	0	+	+	+	0	+	0	+	+	+	0	0	+	0	0	+	+	+	+	+	+	0	+	+		15					
16	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	+	0	+	+	+	+	+		16					
Patient																													AC	$w+^{mf}$	0	0		

Questions:

1. What is the forward ABO type? If that is correct, what anomaly must one explain?

2. What is the reverse ABO type? If that is correct, what anomaly must one explain?

3. Which of these two possibilities did the technologist investigate? What information in the history and type-and-screen results prompted them to do so? What is the cause of this ABO discrepancy? Is any further proof needed?

4. Why was the saline/tube IAT chosen for the last antibody identification panel? Can you state this as a general principle of antibody identification?

5. What is the explanation for the variation in reactivity observed in the panels?

6. How would we select compatible blood for this patient?