

ABO Discrepancy #3

Case study by Jim Perkins (© 2009)

An 81 y.o. woman with a history of atrial fibrillation was admitted for nausea, diaphoresis and other pre-syncope symptoms. She was taking digoxin, verapamil, metoprolol, and synthroid. Her heart rate was in the 30's and 40's, but her digoxin level came back as 0.9 (elevated = >2.0 µg/L) and her free thyroxine was normal. In the ED her hematocrit was 31, and a type-and-screen was ordered.

ABO and Rh Typing

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

Antibody Screen

	Gel
SCI	w+, mf
SCII	0

Direct Antiglobulin Test (tube method)

	Poly	IgG	<C3
AHG	2+	vw+	2+
CCC		2+	

Initial antibody identification panel

8RA165		Rh system						Kell					Duffy		Kidd		Xg	Lewis		MNSs				P	Lutheran		Other				
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	Typings	Cell	Gel	
1	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	+	0	+	+	0	+	+	0	+	+	0	+	+	C ^w	1	0
2	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	0	+	0	+	+	0	0	0	+	0	+	0	+	+	+		2	0
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	0	0	+	+	0	+	+	+	0	+	0	0	+		3	0	
4	Ror	+	0	0	+	+	+	0	+	0	+	0	+	0	0	+	0	+	0	0	0	+	0	+	+	0	+		4	0	
5	r'r	0	+	0	+	+	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	+		8	0	
9	rr	0	0	0	+	+	0	0	+	0	+	0	+	+	0	0	+	+	0	+	+	0	+	0	+	+	+		9	0	
10	rr	0	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	+		11	0	
Patient																													AC		

Antigen Phenotype

	Rh system				Kell				Duffy		Kidd		Lewis		MNSs							
	C	E	c	e	K	k	Kp ^a	Js ^a	Fy ^a	Fy ^b	Jk ^a	Jk ^b	Le ^a	Le ^b	S	s	M	N	P1	I	H	A ₁
Patient													3+	0			0	4+	3+			4+
Pos control													3+	4+			3+	3+	3+			4+
Neg Control													0	0			0	0	0			0

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Cold panel, raw plasma

Lot #05476		Rh system					Kell						Duffy		Kidd		Lewis		P	MNSs					Lutheran		Xg	Other Typings	Saline/tube			
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	IS	RT	18°
1	RZR1	+	+	0	+	+	0	0	+	0	0	0	+	+	+	+	0	0	0	+	+	0	+	+	0	+	+		1	4+	3+	4+
2	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	+	+	0	+	0	+	0	+	+	+	+	+	Sc:2	2	2+	2+	4+
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	+	0	+	0	+	+	0	+	0	+	+		3	3+	3+	4+
4	Ror	+	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	0	0	+	+	0	0	+	0	+	+	He+,St(a+)	4	3+	2+	4+
5	r'r	0	+	+	0	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	+	0	+	+		5	3+	3+	4+
6	r''r	0	0	+	+	+	0	0	+	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	+		6	3+	3+	4+
7	rr	0	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	+	0	+	+	+	0	+	0	+	+		7	3+	3+	4+
8	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	+	0	0	+	+	+	0	+	+	0	+	+	Lu14	8	1+	2+	4+
9	R2R2	+	0	0	0	+	0	0	+	0	+	0	+	+	0	+	+	+	+	+	+	0	+	0	+	+		9				
10	R1R1	+	+	0	0	+	0	+	0	0	+	0	+	+	+	+	+	+	0	0	+	0	+	+	0	+	0	Yt(a-)	10			
11	R2R2	+	0	+	+	+	0	0	+	0	+	0	+	0	+	0	+	+	+	0	0	+	0	+	0	+	0	Bg(a+)	11			
12	rr	0	0	+	0	+	0	0	+	+	0	0	+	+	0	+	+	+	0	0	0	+	0	+	0	+	+	I-	12			
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	+	+		14			
15	rr	0	0	+	0	+	+	0	+	0	+	+	+	0	0	+	+	0	0	+	+	0	0	+	0	+	+		15			
16	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	0	+	0	0	+	+	0	+	0	0	+	+		16			
Patient																												AC	1+	1+	4+	
Cord #1																												C1	0	0	4+	
Cord #2																												C2	0	0	4+	
Cord #3																												C3	0	0	4+	
A1																												A1	2+	3+	4+	
A2																												A2	w+	2+	4+	

Repeat screen and reverse type with RESt^R adsorption

RBC type	IS	37°C	AHG	RESt ^R adsorbed plasma	
				IS	RT
SCI	w+	0	0	0	0
SCII	2+	0	0	0	0
A ₁	2+	0	0		
A ₂	w+	0	0		
B	4+	3+	3+		
Auto	w+	0	0		

Repeat DAT with warm washed RBCs

	Poly	IgG	<C3
AHG	3+	0	2+
CCC		2+	

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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?
4. What is RESt^R, and what did RESt^R adsorption demonstrate? What other procedure could have demonstrated this? What is the serologic diagnosis?
5. Is there an antibody specificity?