

**ABO discrepancy #3** Case Study by Jim Perkins MD (©, 2009)

An 81 y.o. woman with a history of atrial fibrillation was admitted for nausea, diaphoresis and other pre-syncopal symptoms. She was taking digoxin, verapamil, Toprol, 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
OI	w+, mf
OII	0

**Direct Antiglobulin Test**

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

**Initial panel**

8RA165		Rh system						Kell				Duffy		Kidd		Xg	Lewis		MNSs				P	Lutheran		Other	Cell	Gel			
Cell	Rh	D	C	E	c	e	V	K	k	Kp <sup>a</sup>	Kp <sup>b</sup>	Js <sup>a</sup>	Js <sup>b</sup>	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>	Xg <sup>a</sup>	Le <sup>a</sup>	Le <sup>b</sup>	S	s	M	N	P1	Lu <sup>a</sup>	Lu <sup>b</sup>	Typings	Cell	Gel	
1	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	+	0	+	+	0	+	+	0	+	+	0	+	+	C <sup>w</sup>	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	+		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	+	+	+		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				I	H	A <sub>1</sub>					
	C	E	c	e	K	k	Kp <sup>a</sup>	Js <sup>a</sup>	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>	Le <sup>a</sup>	Le <sup>b</sup>	S	s	M	N				P1				
Patient													3+	0			0	4+	3+					4+		
Pos control													3+	4+			3+	3+	3+					4+		
Neg Control													0	0			0	0	0					0		

Lot #05476		Rh system						Kell					Duffy		Kidd		Lewis		P	MNSs				Lutheran		Xg	Other Typings					
Cell	Rh	D	C	c	E	e	V	K	k	Kp <sup>a</sup>	Kp <sup>b</sup>	Js <sup>a</sup>	Js <sup>b</sup>	Fy <sup>a</sup>	Fy <sup>b</sup>	Jk <sup>a</sup>	Jk <sup>b</sup>	Le <sup>a</sup>	Le <sup>b</sup>	P1	M	N	S	s	Lu <sup>a</sup>	Lu <sup>b</sup>	Xg <sup>a</sup>		Cell	IS	RT	18°
1	RZR1	+	+	0	+	+	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	+	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	+	+	s	+	+	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	+	+		13			
14	rr	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	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+	

**Additional testing**

RBC type	IS	37°C	AHG	REST ads. serum	
				IS	RT
OI	w+	0	0	0	0
OII	2+	0	0	0	0
A <sub>1</sub>	2+	0	0		
A <sub>2</sub>	w+	0	0		
B	4+	3+	3+		
Auto	w+	0	0		

Repeat DAT w/ warm washed RBCs			
	Poly	IgG	< C3
AHG	3+	0	2+
CCC		2+	

### **ABO Discrepancy #3**

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 hypotheses did the technologist investigate? What information in the history and type-and-screen results prompted him or her to do so?
4. What is the serologic diagnosis?
5. Is there an antibody specificity?