AIHA CASE #9

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

Indian Immunohematology Initiative

History: This patient was a 41 year old woman with menorrhagia due to leiomyomata and urinary stress incontinence admitted for hysterectomy. She was G3P3 without known transfusions in the past. Her hematocrit was 33.8 with an MCV of 76.7, MCH 25.7, and RDW 18.7. A specimen for type-and-screen was received during a busy morning on the day of her surgery.

ABO and Rh Typing

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

Antibody Screen

	Gel
SCI	1+
SCII	2+

Direct Antiglobulin Test (tube method)

AHG	Poly	IgG	<C3
IS	0		
5' inc.	0		
CCC	2+		

Screening cell phenotypes (lot # VS152)

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	Gel
SCI	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	0	+	+	0	+	+	0	+	0	+	+	+	0	+	1+
SCII	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	0	+	+	+	0	+	+	+	+	0	+	0	+	2+

Initial Plasma Panel

Lot# VRA109		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	2+
2	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	+	0	+	0	0	+	+	+	0	+s	0	+		2	2+
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	+	+	+	0	0	+	+	+	+	+	+	0	+		3	2+
4	Ror	+	0	0	+	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	0	+	0	0	0	+		4	2+
5	r'r	0	+	0	+	+	0	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	+s	0	+		5	2+
6	r"r	0	0	+	+	+	0	0	+	0	+	0	+	0	0	+	0	+	0	+	+	+	+	+	+	0	+		6	2+
7	rr	0	0	0	+	+	0	+	+	0	+	0	+	0	+	+	+	+	+	0	0	+	+	+	+	0	+		7	2+
8	rr	0	0	0	+	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	0	+	0	0	+		8	2+
9	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	0	+	+	+	0	+	0	+	0	0	0	+		9	2+
10	rr	0	0	0	+	+	0	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	0	+		10	2+
11	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	0	+	0	0	+	+	0	+	+	+	+	+		11	2+
Patient																													AC	

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Additional testing

Cells	Saline antibody screen				Cold panel				RESt^{R}* adsorption	
	IS	30'37^{O}C	AHG	CC	IS	60' RT	60' 15^{o}	60' 4^{o}	30' RT	30' 15^{o}
SCI	0	0	0	2+	0	0	3+	4+	0	0
SCII	0	0	0	2+	0	0	3+	4+	0	0
Auto	0	0	0	2+	0	0	3+	4+		
O Cord					0	0	w+	4+		

*RESt^{R} or "Rabbit Erythrocyte Stroma" is a lyophilized product prepared from rabbit RBC membranes that

The technologist handling the problem diagnosed a cold autoantibody. The patient was out of the operating room by the time this workup was finished.

Question:

1. Do you agree with this diagnosis? Are you comfortable stopping there?

The evening shift supervisor picked up the problem and did the following additional work.

Repeat DAT				REST adsorbed plasma		Repeat antibody screens			Warm autoadsorbed plasma		
AHG	Poly	IgG	<C3		Gel	PEG	LISS 37^{o}	LISS AHG	PEG	LISS AHG	Gel
IS	1+^{w}	1+^{w}	0	SCI	2+	vw+	0	1+	0$^{\surd}$	0$^{\surd}$	1+
5' inc.	0	0	0	SCII	2+	w+	0	1+	0$^{\surd}$	0$^{\surd}$	1+
CCC	2+	2+	2+								

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Eluate Panel

8RA178		Rh system						Kell						Duffy		Kidd		Xg	Lewis		MNSs				P	Lutheran		Other Typings			Last wash	
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	AHG		AHG
1	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	+	0	+	0	0	+	+		1	3+	BCell	0
2	R1wR1	+	+	0	0	+	0	+	+	0	+	0	+	+	+	+	+	+	0	+	+	+	0	+	0	+	0	C^w	2	3+		
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	+	0	+	0	+	+	+	+	0	+	0	+	+		3	3+		
4	Ror	+	0	+	0	+	0	0	+	0	+	0	+	0	0	+	0	0	0	+	+	0	0	0	0	+	0	Bg(a+)	4	3+		
5	r'r	0	+	+	0	+	0	0	+	0	+	0	+	+	0	0	+	0	+	+	+	0	+	0	0	+	+		5	3+		
6	r"r	0	0	+	+	+	0	+	0	0	+	0	+	+	0	0	+	0	+	+	+	+	0	+	0	+	+		6	3+		
7	rr	0	0	+	0	+	0	+	0	0	+	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	+	Bg(a+)	7	3+		
8	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	+	0	0	+	+	+	0	+	0	0	+	0		8	3+		
9	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	+	0	+	+	0	0	0	+	0	+	0	+	+		9	3+		
10	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	+	+	0	+	+	+	+	+	+	0	+	+		10	3+		
11	R2Rh32	+	w	+	+	w	0	0	+	0	+	0	+	0	0	+	0	0	+	+	0	+	+	0	0	+	+		11	3+		
Patient																													AC			

No specimen remained for further workup.

Questions:

2. Why might there be a discrepancy between the initial and repeat DAT results? (Hint: check the DAT procedure or the manufacturer's package insert.) (Hint #2: it was a busy morning.) Why was the evening shift supervisor prompted to repeat this test?

3. What antibody(ies) is(are) present? What assumption made by the initial technologist led to the erroneous result? What does the warm autoadsorption show? Why did the autoadsorbed plasma react by the gel method but not by the LISS/tube or PEG tube methods? Can we make use of this observation?