

ABID CASE #12

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



History: This patient was a 50 year old woman admitted for resection of lung cancer. She had been transfused 14 weeks earlier. At that time the antibody screen was negative.

ABO and Rh Typing

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

Antibody Screen, saline/ tube IAT method using 4 drops of serum

	IS	37°, 30°	AHG	CCC
OI	0	0	w+	2+
OII	0	0	w+	2+
OIII	0	0	w+	2+

Direct Antiglobulin Test

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

Initial Panel

Lot #34183		Rh system					Kell					Duffy		Kidd		Lewis		P	MNSs					Lutheran		Xg	Other Typings	LISS					Eluate		
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	37°	AHG	CC	<IgG	CC
1	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	+	0	+	+	0	+	+	0	+	0	+	0	+	+	+	1	0	0	w+		1+	
2	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	0	+	+	0	+	0	+	0	+	0	+	+	C ^w	2	0	0	w+		1+	
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	+		3	0	0	w+		1+	
4	Ror	+	0	+	0	+	0	0	+	0	+	0	+	0	0	+	+	0	0	+	+	0	0	+	0	+	+		4	0	0	w+		1+	
5	r'r	0	+	+	0	+	0	0	+	0	+	0	+	+	+	0	+	+	0	0	+	0	0	+	+	+	+		5	0	0	w+		w+	
6	r ^o r	0	0	+	+	+	0	0	+	0	+	0	+	+	+	0	0	+	+	+	+	+	+	+	0	+	+	Co(b+)	6	0	0	1+		1+	
7	rr	0	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	0	+	+	+	0	0	+	0	+	+	Yt(b+)	7	0	0	1+		1+	
8	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	0	0	+	0	+	+		8	0	0	1+		1+	
9	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	+	0	+	0	+	0	+	+	+	0	0	+	+		9	0	0	1+		1+	
10	R1R1	+	+	0	0	+	0	0	+	0	+	+	+	0	0	0	+	+	0	+	+	+	0	0	0	+	0		10	0	0	1+		1+	
11	Ror	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	+	0	+	+	+	+	0	+	0	+	0	He+	11	0	0	w+		1+	
Patient																												AC							

Plasma with panel of cells lacking high-frequency antigens, saline/tube technique

Phenotype	JMH-	Cs ^a -	Kn ^a -	Yk ^a - Kn ^a -	Yk ^a -	McC ^a - McC ^c -	Yt ^a -	k-	Kp ^b -	Js ^b -
AHG (>IgG)	1+	1+	w+	1+	1+	1+	vw+	1+	0 ^v	1+

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Additional testing; DTT and ficin treated RBCs

	DTT	Ficin	Eluate
	AHG (>IgG)	AHG (>IgG)	AHG (>IgG)
OI	0 ^v *	1+	w+
OII	0 ^v	1+	w+
OIII	0 ^v	1+	w+
Auto		0 ^v	
Kp ^b - #1			0 ^v
Kp ^b - #2			0 ^v
Kp ^b - #3			0 ^v

* "0^v" indicates that the Coombs' control cells reacted appropriately

Selected cell panel

Cell	Rh system					Kell				Duffy		Kidd		Lewis		P	MNSs				Lutheran		Xg	Other Typings	Cell	AHG	CC			
	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
1	+	+	0	+	+		0	+	+	0			+	+	0	+	0	+	0	+	+	+	+					1	0	2+
2	0	0	0	+	+		0	+	+	0			+	+	+	+	0	0	0	+	+	0	+					2	0	2+
3	+	0	0	+	+		0	+	+	0	0	+	+	0	+	+	0	+		+	0	0	+					3	0	2+
4	+	+	0	+	+	0	0	+	+	0	0	+	+	+	+	+	0	+	0	+	+	+	+	0	+	+		4	0	2+
5	+	+	0	0	+		0	+	+	0	0	+	0	+	+	+	0	+	0	+	+	0	+	+	+			5	0	2+
6	+	+	0	+	+	0	0	+	+	0	0	+	0	+	+	0	+	0	0	+	0	0	+	0	+	+		6	0	2+
7	+	+	0	+	+		0	+		0			0	+	+	0	+	0	+	0	+	+	+					7	0	2+
8																												8		
9																												9		
10																												10		
Patient																												AC		

Antigen Phenotype

	Rh system				Kell							Duffy		Kidd		Lewis		MNSs				p	I	H	A ₁
	C	E	c	e	K*	k	Kp ^{a*}	Kp ^{b*}	Kp ^{b*}	Kp ^{b*}	Js ^a	Fy ^{a*}	Fy ^{b*}	Jk ^{a*}	Jk ^{b*}	Le ^a	Le ^b	M	N	S*	s*	P1			
Patient	0	0	4+		0		3+	0	0	0		3+	0	3+	2+	0	3+	4+	4+	2+	3+	0			
Pos control	3+	4+	4+		3+		3+	1+	3+	3+		3+	2+	3+	2+	3+	3+	3+	4+	3+	3+	2+			
Neg Control	0	0	0		0		0	0	0	0		0	0	0	0	0	0	0	0	0	0	0			

*Typing performed on neocytes using anti-Kp^a and anti-Kp^b antisera acquired through the SCARF program

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Questions:

1. What is the identity of this antibody? What are the possibilities when all cells in the initial panel are reactive?
2. Is any further workup needed to prove it? Are other antibodies ruled out as required by our procedure manual?
3. Is this an example of primary or secondary immunization?
4. Does this antibody cause hemolytic transfusion reactions? Hemolytic disease of the newborn?
5. How would we select compatible blood for this patient? What percentage of donors is expected to be compatible with this recipient?
6. What is the biochemical nature of the antigen? What are the genetics? (Include a discussion of DTT and ficin)