INDIAN IMMUNOHEMATOLOGY INITIATIVE
CASE OF THE MONTH: APRIL 2008
Case study by Jim Perkins, M.D. (©2009)

History: This patient was a 40 year old woman with cancer of the liver who was transfused on multiple occasions. Her last transfusion was 3 weeks earlier at which time her antibody detection test ('antibody screen') was negative.

ABO and Rh Typing

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

Antibody detection test (screen); gel column agglutination technique

Lot #VS169		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		Gel		
OI	R1R1	+	+	0	0	+	0	+	+	0	+	0	+	+	0	+	+	+	0	+	+	+	+	+	+s	0	+		0		
OII	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	+	+	+	0	0	+	0	0	+	0	+	+	0	+		1+		

Direct Antiglobulin Test

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

Initial Panel; gel column agglutination technique

VRA112		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	0		
2	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	+	+	0	+	+	0	+	0	+	0	+s	0	+		2	0		
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	0	+	+	0	+	+	+	+	0	+	0	+		3	1+		
4	Ror	+	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	+	0	0	+		5	0		
6	r"r	0	0	+	+	+	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	+	+	+	+	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	+		9	0		
10	rr	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	+		11	0		
Patient																													AC			

Additional antibody identification cells, tube agglutination technique, PEG enhancement

Lot #03475		Rh system						Kell						Duffy		Kidd		Lewis		P	MNSs				Lutheran		Xg	Other Typings		PEG	
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	AHG	CC
1	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	0	+	+	0	+	+	0	+	+	0	+	+		1	0	2+
2	R1wR1	+	+	0	0	+	0	0	+	0	+	0	+	0	+	+	+	+	0	+	+	+	0	+	0	+	0	C^w, Co^b+	2	0	2+
3	R2R2	+	0	+	+	0	0	+	+	0	+	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	+		3	w+	
4	Ror	+	0	+	0	+	+	0	+	0	+	+	+	0	0	+	0	+	0	+	+	+	+	0	+	+	0		4	0	2+
5	r'r	0	+	+	0	+	0	0	+	0	+	0	+	0	+	+	0	+	0	+	+	+	+	+	0	+	0		5	0	2+
6	r"r	0	0	+	+	+	0	+	+	0	+	0	+	0	+	+	+	0	+	+	+	0	+	+	0	+	0	Co^b+	6	0	2+
7	rr	0	0	+	0	+	0	0	+	0	+	0	+	0	+	+	0	0	+	+	+	0	+	0	0	+	+		7		
8	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	+	0	0	0	0	+	0	0	+	0	+	0	Bg^a+	8		
9	rr	0	0	+	0	+	0	0	+	0	+	0	+	+	0	0	+	0	+	+	+	+	+	0	0	+	+		9		
10	R1R1	+	+	0	0	+	0	+	0	0	+	0	+	0	+	+	+	+	0	+	+	0	+	+	0	+	+		10		
11	R2r	+	0	+	+	+	0	0	+	0	+	0	+	0	0	0	+	0	+	+	0	+	0	+	0	+	0	He+	11		
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	0	0	4+	NT																										
Pos control	3+	3+	3+																											
Neg Control	0	0	0																											

Questions:

1. What is the probable identity of this antibody?

2. Is any further workup needed to prove it?

3. Why doesn't the antibody react with all cells carrying the corresponding antigen? What is this phenomenon called?

4. Does this antibody cause hemolytic transfusion reactions? (Hint: if the patient was transfused 3 weeks earlier, why isn't there a mixed field typing for C and/or E showing transfused cells of the common Rh phenotypes R1 or R2.)

5. Does this antibody cause hemolytic disease of the newborn?

6. How would we select compatible blood for this patient? What percentage of donors is expected to be compatible with this recipient?

7. What is the biochemical nature and the genetics of the antigen corresponding to the antibody identified in this patient? (Review the outline of the features of the relevant blood group system.) What is the patient's most likely genotype for the relevant blood group system?