

ABID CASE #21

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



History: This 22 year old G3P0 woman has lost 2 pregnancies, one at 6 weeks gestation and one at 12. A first prenatal specimen was received at 7 weeks' gestation. She has not been transfused and previous blood group antibody detection tests were negative.

ABO and Rh Typing

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

Antibody Detection Test (“Screen”) by gel column agglutination

	Gel
OI	3+
OII	3+

Direct Antiglobulin Test

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

Initial Panel

Lot #VRA125		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	0	+	C ^w	1	3+					
2	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	+	+	+	0	+	+	0	+	0	+s	0	+		2	3+					
3	R2R2	+	0	+	+	0	0	0	+	0	+	0	+	0	+	+	0	+	0	+	0	+	0	+	+s	0	+		3	3+					
4	Ror	+	0	0	+	+	+	0	+	0	+	0	+	0	0	+	0	+	+	0	0	+	0	+	+	0	+		4	3+					
5	r'r	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	+	+s	0	+		6	0					
7	rr	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	+		8	0					
9	rr	0	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	+	0	0	+		11	3+					
Patient																													AC						

Antibody screening cells phenotype

Lot #VS249		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	Gel						
OI	R1R1	+	+	0	0	+	0	0	+	0	+	0	+	+	0	+	0	+	0	+	+	+	+	+	+	0	+		3+						
OII	R2R2	+	0	+	+	0	0	+	+	0	+	0	+	+	+	+	+	0	+	0	0	+	+	+	+	0	+		3+						

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Antigen Phenotype

	Rh system				Kell							Duffy		Kidd		Lewis		MNSs				p					
	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	I	H	A ₁		
Patient	0	0	4+																								
Pos control	3+	3+	4+																								
Neg Control	0	0	0																								

Questions:

1. What alloantibody or autoantibody is present? Is this possible given the patient's blood type?

2. What additional workup would you do to prove your hypothesis?

3. What other test should be done on this pregnant woman?

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A sample of the patient’s RBCs was sent to the immunohematology reference laboratory of the local blood center for testing with a commercial anti-D panel (Hemo Bioscience, Durham, NC, USA) of monoclonal antibodies directed against different Rh(D) epitopes with the following results:

Anti-D cell line	Expected patterns of reactivity of different forms of partial D with the different monoclonal anti-D antibodies																Test results		
	Weak D type 1&2	DII & DNU	DIII	DIV	DV	DCS	DVI	DVII	DOL	DFR	DMH	DAR	DAR-E	DHK & DAU-4	DBT	Ro ^{Har}	Pos Cont	Neg Cont	Pt
LHM76/58	+	+	+	+	+/0	+	0	+	+	+	+	+	0	0	0	(+)/0	4+	0	4+
LHM76/59	+	+	+	0	+	+	+	+	+	+	+	+	+	+	0	0	4+	0	4+
LHM174/102	(+)/0	+	+	0	0	+	0	+	0	0	+	0	0	0	0	0	4+	0	0 ^v
LHM50/28	+	+	+	+	+	+	0	+	+	+	+	+	+	+	0	0	4+	0	4+
LHM169/81	+	+	+	0	0	+	0	+	+	+	+	0	0	0	0	0	4+	0	4+
ESD1	+	+	+	0	+	+	+	+	+	+	+	+	+	+	0	0	4+	0	4+
LHM76/55	+	+	+	0	+	+	+	+	+	+	+	+	+	+	0	0	4+	0	4+
LHM77/64	+	0	+	0	+	+	+	+	+	+	+	+	+	+/0	0	0	4+	0	4+
LHM70/45	(+)/0	+	+	0	0	0	0	+	0	0	0	0	0	0	0	0	4+	0	0 ^v
LHM59/19	+	+	+	+	+	+	0	0	0	0	(+)	0	(+)	+	+	0	4+	0	0 ^v
LHM169/80	+	+	+	+	+	+	0	+	+	+	+	+	+	0	0	0	4+	0	4+
LHM57/17	+	+	+	+	+	0	0	+	+	0	+	+	0	0	+	0	4+	0	4+

A new patient blood sample was obtained for titration of her antibody.

Titration (“vw+” denotes that the agglutination can only be seen with a microscope; in the author’s laboratory the endpoint of a titration is the last tube reacting macroscopically.)

ANTIBODY: Anti-D			EDD: 32 weeks from now					Tech:					Date tested: 8 weeks gestation				
Sample dilution, Reaction strength at AHG phase:																	
Sample date:	1	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	Titer		
Old:																	
New: 8 weeks	2+	2+	1+	1+	vw+	0	0	0	0							8	
Cell type: R1r			Manufacturer: donor JTP					Lot number:					Comment:				

Questions:

4. What does the monoclonal anti-D panel demonstrate?

5. What is the antibody titer? Are there any special actions to be taken at this time based on the titer?