ABID CASE #23, ANSWERS

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

Indian Immunohematology Initiative

1. What is the probable identity of this antibody(ies)? How did you reach that conclusion?

   Anti-Fy^a plus anti-V.

   After "crossing out" on the 19 blood groups we typically attend to first in on an antibody identification the antibody identification panel we are left with anti-E and anti-Fy^a, but anti-Fy^a is consistent with all of the positive and negative reactions except one. In fact, the first two criteria for proof of anti-Fy^a (3 antigen-positive cells react, 3 antigen-negative cells are non-reactive) are met. But there is one reactive cell, # 4, that is Fy^a-negative. If we then inspect the phenotype of that cell for presence of a lower prevalence antigen such as Lu^a or Kp^a, we immediately notice that it expresses the Rh antigen V.

2. Is any further workup needed to prove it? If additional cells must be tested, select them from the following panel. Attempt to complete the workup with as few additional tests as possible.

   Anti-E must be ruled out as it was by the negative reaction with cell #7 (E double dose, Fy(a-b+) and V-). Also anti-V must be ruled in as it was by reactions with cells #15 and 20 (V+ but Fy^{a-b-}). Typically we also want to demonstrate that the patient lacks the antigen corresponding to the hypothetical antibody specificity, and that was done for Fy^a. However, the frozen anti-V the lab had gave an invalid negative control reaction; note however that the patient is Caucasian and unlikely to be V-positive. The technologist who worked up the problem also ruled out anti-C^w and anti-Le^a using cells on another panel. Note that cell #1 on the initial panel is C^w positive. Reactivity of that cell is explained by the hypothesis that there is anti-Fy^a, but many experienced serologists would rule out underlying antibodies against low frequency antigens that appear on reactive panel cells. This is not required by our SOP, and is not entirely logically consistent, since there are many other clinically significant antibodies directed against low frequency antigens that we are not ruling out. But it is a good practice that can be followed if the needed rule out cells are readily available.

		Rh system						Kell						Duffy		Kidd		Xg	Lewis		MNSs				P	Lutheren		Other			Saline, 4 drop serum		
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**	**IS**	**30', 37°**	**AHG**
1	**R1wR1**	+	+	**0**	**0**	+	**0**	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	**C^w, Co^b**	**1**				
2	**R1R1**	+	+	**0**	**0**	+	**0**	**0**	+	**0**	+	**0**	+	+	+	**0**	+	+	**0**	+	**0**	+	**0**	+	+	**0**	+		**2**				
3	**R1R1**	+	+	**0**	**0**	+	**0**	+	+	**0**	+	**0**	+	+	+	**0**	+	+	**0**	+	+	+	+	+	**0**	**0**	+		**3**				
4	**R1R1**	+	+	**0**	**0**	+	**0**	**0**	+	**0**	+	+	+	**0**	+	+	**0**	+	+	**0**	**0**	+	+	+	+	**0**	+		**4**				
5	**RzR1**	+	+	+	**0**	+	**0**	**0**	+	**0**	+	**0**	+	+	**0**	+	+	**0**	**0**	+	+	**0**	**0**	+	+	**0**	+		**5**				
6	**RzR2**	+	**w**	+	+	**0**	**0**	**0**	+	**0**	+	**0**	+	+	**0**	**0**	+	**0**	+	**0**	**0**	+	+	+	+	**0**	+		**6**				
7	**R2R2**	+	**0**	+	+	**0**	**0**	**0**	+	**0**	+	**0**	+	**0**	+	**0**	+	**0**	**0**	+	**0**	+	+	**0**	+	**0**	+		**7**	**0**			
8	**R2R2**	+	**0**	+	+	**0**	**0**	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**Co^b, Yt^b**	**8**				
9	**R2R2**	+	**0**	+	+	**0**	**0**	**0**	+	**0**	+	**0**	+	+	+	**0**	+	+	**0**	+	+	**0**	+	+	+	**0**	+		**9**				
10	**R1r**	+	+	**0**	+	+	**0**	**0**	+	+	**0**	**0**	+	+	+	+	+	+	**0**	+	+	+	+	+	**0**	**0**	+	**Yt^b**	**10**				
11	**r'r**	**0**	+	**0**	+	+	**0**	**0**	+	**0**	+	**0**	+	+	**0**	+	+	**0**	**0**	+	**0**	+	+	**0**	+	**0**	+		**11**				
12	**r"r**	**0**	**0**	+	+	+	**0**	**0**	+	**0**	+	**0**	+	+	**0**	**0**	+	+	+	**0**	+	+	+	+	**0**	**0**	+		**12**				
13	**rr**	**0**	**0**	**0**	+	+	**0**	+	+	**0**	+	**0**	+	+	+	+	**0**	+	**0**	+	+	+	+	**0**	+	+	+		**13**				
14	**rr**	**0**	**0**	**0**	+	+	**0**	+	+	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	+	**0**	+	+	+	**Yt^b**	**14**				
15	**rr**	**0**	**0**	**0**	+	+	+	**0**	+	**0**	+	**0**	+	**0**	**0**	+	+	**0**	**0**	+	+	+	+	**0**	+	**0**	+		**15**	**2+**	**0**	**0**	**vw+**
16	**rr**	**0**	**0**	**0**	+	+	**0**	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	+	**0**	+	**0**	**0**	**0**	+	**Yt^b**	**16**				
17	**rr**	**0**	**0**	**0**	+	+	**0**	**0**	+	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**Co^b, Yt**	**17**				
18	**rr**	**0**	**0**	**0**	+	+	**0**	**0**	+	**0**	+	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	+	+	+	**0**	+		**18**				
19	**rr**	**0**	**0**	**0**	+	+	**0**	**0**	+	**0**	+	**0**	+	+	**0**	+	**0**	+	**0**	+	+	+	+	**0**	+	**0**	+		**19**				
20	**Ror**	+	**0**	**0**	+	+	+	**0**	+	**0**	+	+	+	**0**	**0**	+	+	+	**0**	**0**	**0**	+	+	+	+	**0**	+		**20**	**2+**	**0**	**0**	**vw+**
Patient																													**AC**		**0**	**0**	**0^V**

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3. Does this antibody(ies) cause hemolytic transfusion reactions? Hemolytic disease of the fetus and newborn?

   Anti-Fy^a causes immediate and delayed hemolytic reactions as well as HDFN. Anti-V, unlike so many other Rh antibodies, is not clinically significant.

4. How would we select compatible blood in this case? Would selection of any particular IAT technique be useful in deciding how to select compatible RBCs?

   Ideally one would type the A or O positive donors for both Fy^a and V and perform an antiglobulin crossmatch. However, since the anti-V did not work, the saline/4 drop plasma IAT with V positive cells was done to determine whether the laboratory's standard crossmatch method at that time would detect incompatibility due to the anti-V. Since the anti-V reacted only weakly by this saline/tube method but better with the gel method, it would be prudent to crossmatch with the latter.

5. What cells in the above panel likely come from donors of African descent?

   Cell #15 is Fy(a-b-), a phenotype that is most common in individuals of African ancestry (see ABID Case #5). Cell #20 is also Fy(a-b-) but has multiple other markers that it is from a donor of African background including a Js^a antigen, an Ro phenotype (Dce), and the Le(a-b-) phenotype. Both cells, of course, were V positive.