ABID CASE #32; ANSWERS

Case study by Jan Hamilton MT(ASCP)SBB (©2008)

Indian Immunohematology Initiative

Questions:

1. What is the specificity of the antibody in the patient's sample? Is any other testing required to confirm this specificity?

   This antibody appears to be a straightforward anti-K as all of the K-positive cells react and all of the K-negative cells are non-reactive. There are 3 K+ RBCs reactive and more than 3 K- cells non-reactive, and other common clinically significant alloantibodies have been excluded as required by standard identification protocols, so no additional serum testing is required. If available, anti-K should be used to test the patient's red cells for the K antigen. They would be expected to type K- if the patient has alloanti-K.

2. What can be deduced about the crossmatched units from the compatible results?

   The units are K negative, and the plasma does not have other antibodies directed against the donor cells that might have been missed by the antibody screen such as an antibody directed against a low prevalence antigen.

3. Should any further testing be performed on the units prior to transfusion?

   Standard practice in the United States would be to confirm that the units are K- with an anti-K reagent.. However, the K antigen has a low prevalence in South Asian populations. Therefore, it might be sufficient to demonstrate that the units are compatible in an antiglobulin crossmatch.

4. What probable antibody specificities are now apparent in the patient's sample?

   There appears to be a new anti-Jk^a as well as the previously identified anti-K (see cell #9).

5. Are there some alloantibodies that can't be excluded? What additional testing should be performed?

   Anti-C, anti-Fy^a, and anti-N cannot be excluded. Anti-s is excluded on one single dose (S+s+) antigen positive cell. Cells that are K-,Jk(a-) and positive for C, Fy^a, N should be tested to exclude these alloantibodies. If possible, each should carry a double dose of the antigen. In addition, a K-Jk(a-) S-s+ cell should be tested, if available. Alternatively one could type the patient's pretransfusion RBCs for C, Fy^a, N and s to see if she could make the corresponding alloantibodies.

6. What is the likely cause of the patient's drop in hemoglobin? What testing can be done to support this?

   The patient appears to have had a delayed hemolytic transfusion reaction (DHTR) and to have most of the red cells that were transfused to her a week ago cleared from her circulation.

   Additional testing might include:
   1) Demonstrating that the previously transfused units were now incompatible (and Jk(a+), if possible,
   2) Performing a direct antiglobulin test and elution studies with the RBCs from the Pretrasfusion-2 sample.

7. What antibody was recovered in the eluate from the patient's red cells? Is any further testing required?

   The eluate contains anti-Jk^a. Anti-C, and anti-N are not excluded. Anti-s is excluded on S+s+ cells only. Additional cells should be tested with the eluate to exclude these alloantibodies if possible. Alternatively one could type the patients Pretransfusion-1 RBCs as outlined in the answer to question 5.

ABID CASE #32; ANSWERS

8. If the patient received two units of incompatible red cells, why are the direct antiglobulin test and eluate reactivity not stronger?

   Most of the antibody coated donor red cells have already been cleared from her circulation.

9. What would you predict would be the antigen type of the patient and the two transfused units for the antigen in question?

   The patient is likely Jk(a-), and the two transfused units are Jk(a+)

10. Why did the patient's sample change in reactivity in such a short time? Could this have been prevented?

    The patient was likely already immunized to the Jk^a antigen from previous pregnancies or transfusions.

    Previously the anti-Jk^a titer dropped below levels detectable in the gel test. Kidd system antibodies are notorious for this type of behavior. Upon re-stimulation by the most recent transfusions, the antibody titer quickly rose in an anamnestic response. Assuming the initial pretransfusion testing was performed correctly, this reaction could not have been prevented.

11. How might this be prevented in the future?

    Prevention of this type of delayed reaction requires careful documentation of the presence of anti-K and anti-Jk^a in the patient's record. Each time a patient presents for pretransfusion testing, a careful search should be made of previous records to review any known antibodies or other transfusion complications. Some facilities will give the patient a card listing the identified antibodies and the type of units required for transfusion. If the patient is instructed to present this card to a doctor intending to treat her with transfusion, this will alert the blood bank to her antibody history even if the care is being given at a different hospital.

12. How should we now select compatible blood for this patient? What percentage of donors is expected to be compatible?

    Donor units typed as K-, Jk(a-) should be crossmatched for future transfusions.

    In a European population, approximately 23% of donors are Jk(a-) and 91% of donors are K-. This would give a combined frequency of approximately 21% of donors being both K- and Jk(a-) (0.23 x 0.91 x 100%). In the Indian population, virtually all donors are expected to the K-. The frequency of Jk(a-) individuals in South Asian populations is somewhat lower than in Europeans.