

ABID CASE #3 , ANSWERS

Case study by Jim Perkins, M.D. (© 2005)



1. What is the probable identity of this antibody?

Alloanti-D.

2. Is any further workup needed to prove it? What is a "rule out cell"? What is required for ruling out anti-C and -E in the presence of anti-D? Anti-K?

No. A rule out cell is typically one which is non-reactive with the antibody being investigated, but which possesses another antigen in double dose or otherwise strong expression, for which the corresponding antibody must be ruled out. In some cases, however, such a double dose cell would be rare, so a lesser standard is accepted. For example, cells which lack D but express C or E in double dose are rare. Similarly, double dose K positive cells are rare, and, therefore, are not typically required to rule out anti-K. In the case of K this is not an issue since anti-K sera don't usually "show dosage", but in the case of anti-C and anti-E, it's a compromise.

3. What is the probable source of the immunizing stimulus in this case?

Since she has not been transfused, she was presumably immunized by fetal maternal hemorrhage. One interesting thing about anti-D is how long individuals persist in making the antibody long after being immunized; many other blood group antibodies tend to become undetectable over time.

4. Does this antibody cause hemolytic transfusion reactions?

Yes. Note that her pregnancies were long ago. Anti-D tends to persist, so DHTRs due to anti-D are uncommon.

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

Anti-D is the most common and prototypical antibody causing HDFN.

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

In the US we would select group O, Rh negative RBCs, which were compatible in an indirect antiglobulin test crossmatch. Fifteen % of Caucasian donors are Rh negative, but Rh negative donors are less common in other populations.

7. What is the biochemical nature of the antigen? What is its genetic relationship to the antigen involved in the previous case?

The antigen is carried on a multi-pass membrane protein, directed by a gene closely linked to the CE gene as discussed in ABID case #2. D negative Caucasians typically have deleted D genes, but various other genetic causes result in this phenotype in other, particularly African, populations. D is the most immunogenic of blood group antigens other than A and B.