ABID CASE #1

1. What is the probable identity of this antibody?

   Allo-anti-K

2. Is any further workup needed to prove it? Articulate the standards for identification of a blood group antibody (see SOP #221).

   No. If you include the antibody screening cell there are 3 K positive cells reactive, 3 non-reactive cells, the DAT is negative, and the appropriate antibodies are ruled out (anti-D, -C, -E, -c, -e, -k, -Fy^a, -Fy^b, -Jk^a, -Jk^b, -Le^a, -Le^b, -S, -s, -M, -N, -P1). However, we need a K antigen type.

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

   Previous transfusion

4. Does this antibody cause hemolytic transfusion reactions?

   Yes, severe, even fatal IHTRs, as well as DHTRs.

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

   Yes, severe HDN.

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

   We would select group O, Rh negative, K negative units, which were compatible in a crossmatch using the indirect antiglobulin test ("Coombs' crossmatch). 91% of Caucasian donors (of the proper blood group) are compatible.

7. What is the biochemical nature of the antigen? (Review the outline of the features of the relevant blood group system.)

   The K antigen is carried on a single-pass transmembrane protein with structural similarity of zinc-dependent endopeptidases such as CALLA. It is not destroyed by proteases. The K antigen is highly immunogenic; approximately 10% of K neg individuals receiving a unit of K positive RBCs make anti-K. Therefore, anti-K is one of the most common unexpected antibodies detected. The antigens K, Js^a, and Kp^a are all relatively low frequency antigens, and there are no alleles which direct expression of two of them. A null phenotype exists, and cells of the null phenotype have an abnormal morphology.