

ABID CASE #14

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



1. In working up this urgent problem what hypothesis did the technologist make which then prompted the tests performed? What is the probable identity of this antibody(ies)? Is it an autoantibody or an alloantibody?

Given that the patient had a negative antibody screening test with the gel method but had a crossmatch that directly agglutinated group O RBCs at room temperature ("immediate spin" or "IS"), the technologist guessed that the patient might have a cold-reactive allo- or autoantibody, and chose to perform testing to elucidate such antibodies. Given the urgency of the case they followed Sutton's Law ("go where the money is") and elected to immediately include testing at a low temperature (17°C rather than to complete room temperature (RT) incubation before lowering the temperature of incubation as is usually done. Testing at 17°C seems odd since we typically test at 15°C. However, the difference is immaterial, and there is no point to wasting time to adjust the incubation waterbath to the lower temperature.

The plasma reacts more strongly with normal group O adult RBCs than with group O cord blood cells or I-negative group O adult cells suggesting that the antibody has at least a degree of anti-I specificity, as is commonly seen with cold-reactive autoantibodies. In addition, there is a gradient in the strength of reactivity with adult group O RBCs in the 17° panel, and the screening cells (group O) tested at IS and RT reacting most strongly, the A2 cell only reacting at 17°, and the 3 A1 cells failing to react. Also note that the autocontrol (patient is group A) failed to react suggesting a degree of anti-H specificity (Group O cells express the highest level of H antigen followed by A2 cells and then A1. This pattern is termed "anti-IH" specificity.

2. Why were the patient blood group phenotypes done?

The patient was phenotyped for antigens against which cold-reactive antibodies are often directed, and which might have caused incompatibility at the immediate spin phase of testing in spite of a negative antibody screen, although if such a cold reactive alloantibody had been present we might have expected the group B, pooled reverse typing cell to have reacted, causing an ABO discrepancy. This phenotype tells us that the patient will not make a cold-reactive alloanti-M, -N, -PI, A1, or Lewis antibody.

3. Could this antibody cause a hemolytic transfusion reaction? How would you select compatible blood for this patient?

Autoanti-IH made by group A or B individuals has been reported to cause a hemolytic reaction when group O RBCs were transfused, but only when the antibody was reactive at 30°C or higher.

In this case repeat crossmatches with group A units were negative. The group O units were originally crossmatched because transfusion was felt to be urgent, and we did not know her ABO group, not having encountered the patient previously. The original crossmatches were set up at the same time as the "type-and-screen".