

## **ABO Discrepancy #5; ANSWERS**

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



1. What is the forward ABO type (initial test)? If that is correct, what anomaly must one explain?

*The initial forward type is O. If the patient is group O, one must explain why the patient's plasma failed to agglutinate the group A reverse typing cell.*

2. What is the reverse ABO type? If that is correct, what anomaly must one explain?

*The reverse type is A. If the patient is group A, one must explain why the anti-A typing serum failed to agglutinate the patient's RBCs.*

3. Which of these possibilities did the technologist investigate? What information in the history and type-and-screen results prompted him or her to do so? What is the cause of this ABO discrepancy?

*The tech pursued the second one, namely that the patient had a weak form of the A antigen, due to the results he obtained on repeat and after incubating the test at room temperature. Of note, he saw mixed field agglutination which was a clue to the identification of the weak A subgroup..*

*He then performed an adsorption-elution test with polyclonal anti-A. After incubating this reagent with the patient's RBCs it could be eluted off the patient's RBCs, demonstrating that there was A antigen on the cells. The eluate failed to react with group B or group O cells and the last wash test was negative. A control procedure with normal donor group A RBCs gave identical results.*

*Two years after the initial workup the results of testing the patient's RBCs after treatment with ficin demonstrate another approach to demonstrating a weak A or B antigen. The reactions were only enhanced to 1+ strength, so they are not as definitive as the adsorption/elution results. However they did bring out the mixed field nature of the reaction with this weak A subgroup.*

*If one had entertained the first possibility, there would be no ready explanation why the patient's plasma would react with pooled reagent B cells but not with pooled reagent A cells. So the cause of this discrepancy appears to be very weak expression of the A antigen.*

4. What is the most likely weak A subgroup?

*The findings fit most closely with those described for the  $A_3$  or  $A_{end}$  subgroups of A because of the mixed field reactions.*

5. What further tests might you do?

*A study to determine whether the patient secreted A or H might allow one to distinguish  $A_3$  (A and H in saliva of secretors) from  $A_{end}$  (only H in saliva of secretors)*