

ABO Discrepancy #7

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

The forward type is AB, although the reactions of the patient's RBCs with anti-B appear abnormal. If this is true one must explain why the patient's plasma reacts with the group B reverse typing cell.

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

The reverse ABO type is A. If this is true, one must explain why the reagent anti-B reacted with the patient's RBCs.

3. Which of these hypotheses did the technologist investigate? What information in the type-and-screen results prompted him or her to do so?

The technologist investigated hypothesis 2, looking for evidence of the acquired B phenomenon, which would explain why anti-B agglutinated some of the patient's RBCs (note the mixed field reactions). Weak, mixed field reactions with the anti-B reagent in a group A person are typical of the acquired B phenomenon. Also, the history of chronic infection is consistent with the acquired B phenomenon. Colon cancer is classically associated with acquired B, but 30-40% of cases are NOT associated with GI diseases.

4. What is the serologic diagnosis?

Acquired B phenomenon

5. What is the biochemical explanation for the discrepancy?

Acquired B is thought to be due to bacterial deacetylases which convert the group A immunodominant sugar N-acetylgalactosamine to galactosamine. This sugar is apparently similar enough to galactose, the B immunodominant sugar, that some clones of anti-B will react with it. Note that the altered RBCs react variably with anti-B of both monoclonal and human origin, and that reactions are decreased or eliminated by acidification, presumably because the amino group(-NH₂) of galactosamine is converted to NH₃⁺. These findings are typical of acquired B.