ABO Discrepancies

OBJECTIVES

After viewing this presentation, the Clinical Laboratory Science student will be able to:

- Recognize discrepancies when given reactions for ABO typing.
- Identify possible reasons for unexpected reactions of the ABO System in both the forward and reverse groupings.
- Propose steps that could correct or confirm ABO discrepancies.

But First…

A REVIEW

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A discrepancy may be found between forward and reverse groupings on a current specimen, or a discrepancy may be found between current test results and previously recorded test results.

The initial steps in resolving an ABO discrepancy should include:
- Clerical check of specimen and paperwork
- Determine patient’s age

Obtain the following patient information:
- Diagnosis
- History of transfusions, transplants, or pregnancies
- Current medications

Often times this information will explain the discrepancy, or lead you in the proper direction for investigation.

Repeat testing
- If the red blood cell (RBC) suspension was not washed originally, wash the cells before testing.
Failure to perform and interpret the test correctly may lead to ABO discrepancies. Consider how the following items impact test results:
- Reagents
- Centrifugation
- Temperature
- Cell suspension
- Observing reactions

Reagents
- Insure that the reagents have been added
- Follow manufacturer’s directions
- Check for contaminated reagents

Centrifugation
- Under-centrifugation will not be effective in bringing RBCs closer together. The result is:
  - False negative reactions
- Over-centrifugation will pack the RBCs together too tightly. The result is:
  - False positive reactions

Temperature
- ABO reactions should be performed at room temperature.
  - Too high – may impair reactivity
  - Too low – may impair reactivity
  - Too cold – interference from other cold antibodies

Cell Suspension Concentration
- Suspension too weak
  - Prozone
- Suspension too heavy
  - Postzone

Both prozone and postzone yield negative reactions

Observing Reactions
- Reactions should be observed and recorded immediately following centrifugation.
- Allowing reactions to sit at room temperature following centrifugation may:
  - Allow weak reactions to dissipate.
  - Create interference from other cold reactive antibodies.
Failure to detect hemolysis

- Hemolysis is a sign of antigen/antibody interaction and should be interpreted as a positive reaction!

No hemolysis  Partial hemolysis  Complete hemolysis

Failure to Observe Mixed Field Reactions

- Two cell populations present
- In a test tube, if the first RBCs to come off the button are NOT agglutinated, but agglutinated RBCs do shake off in the end, this is mixed-field agglutination.
- In gel, a mixed-field reaction may be indicated by 2 layers of RBCs- one in the gel and one at the bottom of the microtubule.

Observing Reactions

- A specimen containing fibrin may lead to small clots being misinterpreted as weak agglutination.
- Using dirty glassware may cause misinterpretation of microscopic results.

If the discrepancy persists, it may be necessary to have a new specimen collected.

- Consider the effects of the following:
  - Specimen collected from wrong patient.
  - Specimen drawn from above an IV site.
  - Traumatic draw leading to hemolyzed specimen.

Specimen collected from wrong patient

- If current results do not agree with the patient’s previous history, and you have verified that the specimen label on the current specimen agrees with the test request, it may indicate that the wrong patient was drawn.
  - Have a new specimen collected
  - Use a specimen in-lab that was collected at a different time than the original

Specimen drawn from above an IV site

- Dilutes the specimen
- May cause rouleaux
Traumatic draw leading to hemolyzed specimen

- May cause technologist to miss hemolysis as a positive endpoint in testing.

Once patient identity, specimen issues, and technical problems have been eliminated as a source of the discrepancy, but repeat testing shows a discrepancy still exists, it will be time to perform some additional testing.