ANTIBODY DETECTION AND IDENTIFICATION
Clinical Characteristics of Alloantibody vs. Autoantibody

I. Warm (IgG) alloantibodies

A. Clinically significant – most immunohematology testing designed to detect these antibodies

B. Screen results:
   1. One or more positive screen cells
   2. Negative auto control - unless patient has positive DAT

C. Most common antibodies identified at AHG phase (may be at 37°C)
   1. Rh - largest number of alloantibodies are made against Rh antigens
   2. Kell - account for 2/3 of non-Rh antibodies
   3. If screen/ panel cells are negative but an antiglobulin crossmatch (AGXM) is incompatible consider:
      a. Antibody to low prevalence antigen
      b. Positive DAT on donor unit
      c. Bacterial contamination of unit
   4. If screen and panel cells are all positive consider:
      a. Multiple antibodies- may exhibit variation in reaction strength or phase
      b. Antibody to a high prevalence antigen – often react at the same phase/ reaction strength (e.g. HTLA)

II. Warm autoantibodies

A. Autoantibodies may show specificity to Rh system - most common is autoanti-e

B. Screen results:
   1. Typically all cells positive at same strength at the AHG phase (if an underlying alloantibody is present, strength of reactions may vary).
2. Positive auto control

3. A cold antibody binding complement also may also be present (detected if using polyspecific AHG)

C. Resolve by removing autoantibody to determine the presence of any underlying alloantibody
   -38% of patients with a warm autoantibody will also have alloantibodies.

III. Cold (IgM) alloantibodies

A. Generally considered insignificant, unless they cause RBC hemolysis at 37C

B. Screen results
   1. Positive reactions with one or more screen cells at IS phase of testing; may persist (though weaker) through 37C and AHG
   2. Negative auto control

C. Most common antibodies detected in I.S. phase which may activate complement and continue to be reactive through the AHG phase are Lewis and P₁.

D. Avoid detection by omitting IS phase, using mono-specific anti-IgG AHG reagent or using the prewarm technique.

IV. Cold autoantibodies

A. Insignificant antibodies that interfere with IS phase of testing, as seen in ABO discrepancies and incompatible ISXMs.

B. Screen results:
   1. All cells positive at IS phase
   2. May have positive auto control
   3. Results generally weaken or disappear at 37C; may be detected at AHG if complement was activated and polyspecific AHG reagent is used.
C. Specificities

1. Autoanti-I – Most common autoantibody. Assumes pathologic significance in cold agglutinin disease or mixed autoimmune hemolytic anemia and Mycoplasma pneumonia.

2. Anti-i - relatively weak cold agglutinin; also seen as transient potent antibody in infectious mononucleosis.

3. Autoanti-IH

4. Autoanti-H - seen in A_{1} and A_{1}B individuals (not the alloanti-H of an O_{h} individual which reacts over a wide thermal range with all RBCs except those of other O_{h} individuals)

5. Anti-P- potent IgG hemolysin with wide thermal range (biphasic hemolysin). Seen in PCH

D. Avoid detection by omitting IS phase, using mono-specific anti-IgG AHG reagent, prewarming or cold adsorption.

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<th>Screen/Panel Cells</th>
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