Antibody Identification - Anti-C\textsuperscript{w} Case Study

An order is received for a type, screen and a two unit crossmatch for a 55 year old man. The patient is undergoing a splenectomy following a motorcycle accident. He was transfused in 2004 while serving in the military in Iraq and in 2010 following an automobile accident. He presented with a weakly reacting anti-Jk\textsuperscript{a} at his last transfusion event.

Initial Test Results

<table>
<thead>
<tr>
<th>Anti-A</th>
<th>Anti-B</th>
<th>Anti-D</th>
<th>Rh Control</th>
<th>A1 cells</th>
<th>B cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>4+</td>
<td>4+</td>
<td>4+</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Antibody Screen | Negative  
Crossmatch # 1 Jk(a-) | Compatible  
Crossmatch # 2 Jk(a-) | Incompatible at AHG

Additional testing confirmed that unit #2 is Jk(a-) and that the unit is DAT negative.

Participants were asked to perform an antibody identification.

Expected Results

The patient’s serum, Sample EDU-01, contains anti-C\textsuperscript{w}.

Discussion

Occasionally despite a negative antibody screen, a patient’s serum demonstrates incompatibility at Anti-Human Globulin (AHG) when crossmatched with a donor unit. When this occurs, troubleshooting may be performed to understand the cause of the incompatibility. The possible causes include the following:

- The donor red cells have a positive direct antiglobulin test.
- Antibody to a low-incidence antigen expressed on the donor cells.
- Antibody to an antigen not always represented on antibody screening cells.
- Antibody reacting only with a strong expression of an antigen (dosage or antigen variability) that is not detected by the antibody screen.

In this case, the patient has an antibody (anti-C\textsuperscript{w}) which is considered a low frequency antigen.
Antibody Identification - Anti-C\textsuperscript{w} Case Study (cont.)

Anti-C\textsuperscript{w}

The C\textsuperscript{w} antigen was reported in 1946 and for many years was thought to be antithetical to C. It is now known that C\textsuperscript{w} is antithetical to the high incidence antigen MAR. Most C\textsuperscript{w}\textsuperscript{+} red cells are C\textsuperscript{+}; however, rare examples may be C\textsuperscript{-} neg. The weak C antigen on C\textsuperscript{w}\textsuperscript{+} red cells is due to an altered expression of C rather than to cross-reactivity with Anti-C\textsuperscript{w}. The frequency of the C\textsuperscript{w} antigen is 2% in Whites, 1% in Blacks, 4% in Finns and 9% in Latvians.

Anti-C\textsuperscript{w} can be either IgG or IgM. The antibody does not bind complement and has been implicated in mild to moderate HDFN and mild to severe transfusion reactions - both immediate and delayed. It is often found in individuals with multiple antibodies and can be naturally occurring. Because of the low prevalence of C\textsuperscript{w}, C\textsuperscript{w} negative blood is readily available.

Reference


This case study and antibody discussion was provided by Hemo bioscience (www.hemobioscience.com), the manufacturer of these Blood Bank proficiency samples.