Anti-Jk(a) Case Study

A 79-year-old retired cattle rancher had a stroke a year ago, now has difficulties with balance, and fell down the front steps when leaving his home this morning. His daughter has brought him to the Emergency Department where it was discovered that he has a broken hip and there is possible internal bleeding, so he is scheduled for surgery. His medical history is unremarkable other than the history of stroke and a transfusion 5 years ago after a car accident.

Pre-surgical testing is ordered including ABO, Rh(D), Antibody Screen, and, if indicated, Antibody Identification. Sample EDU-05 (2017) represented the patient red blood cells. Sample EDU-06 (2017) was the patient serum.

Expected Results

<table>
<thead>
<tr>
<th>Sample</th>
<th>ABO</th>
<th>Rh(D)</th>
<th>Antibody Screen</th>
<th>Antibody ID</th>
<th>Antigen Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDU-05 Red cells</td>
<td>A</td>
<td>POS</td>
<td></td>
<td></td>
<td>Jk(a-)</td>
</tr>
<tr>
<td>EDU-06 Serum</td>
<td>A</td>
<td></td>
<td>POS</td>
<td>Anti-Jk(a)</td>
<td></td>
</tr>
</tbody>
</table>

Discussion

The first report related to the Kidd (JK) blood group system was in 1951 when anti-Jk(a) was discovered during the investigation of a case of hemolytic disease of the fetus and newborn (HDFN).\(^1\) Two years later, anti-Jk(b) was found in combination with anti-Fy(a).\(^2\) In 1959, a null Jk(a-b-) phenotype was described when a patient’s serum demonstrated an antibody to Jk3, a high incidence antigen which is present on all Jk(a) or Jk(b) positive red cells.\(^3\) Jk(a-b-) individuals with anti-Jk3 may also make a separable anti-Jk(a) or anti-Jk(b), depending on the phenotype of the immunizing cells. The Jk(a-b-) phenotype appears to be more common in tropical regions of Asia, but Caucasian Jk(a-b-) individuals have also been found in Finland. Studies have shown that the varied Jk(a-b-) phenotypes in different populations are the result of different Jk(null) alleles.\(^4\)-\(^9\)

Kidd antibodies optimally react at the antiglobulin phase of testing and may bind complement.\(^10\) The antibodies are known to become weak or non-reactive after a very short period of time. As a result of exposure to antigen positive units, patients with undetectable levels of Kidd antibodies may experience a hemolytic reaction due to a rapid increase in antibody titer following transfusion.\(^10\)-\(^12\)

The anti-Jk(a) antibody detected in the patient’s serum was most likely stimulated by his transfusion several years ago. Anti-Jk(a) is clinically significant and Jk(a) negative donor units should be selected for transfusion. Approximately 23% of random blood donors will be Jk(a) negative.\(^13\)
Anti-Jk(a) Case Study (cont.)

References


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