A Chilling Case of Hemolytic Anemia in a Patient with Mononucleosis

Preeti Badve MD¹, Lindsay Jablonksi MD²
¹Department of Internal Medicine; ²Department of Infectious Diseases; Jefferson Health Northeast

Introduction

- Cold agglutinins are usually IgM antibodies which are pentameric, allowing them to bridge the distance between red blood cells.
- Pathogenic cold agglutinins often have a thermal amplitude of 82 degrees F or higher.
- Cold agglutinin syndrome (CAS) is an uncommon complication in viral infections like infectious mononucleosis despite the common production of cold agglutinins.

Case

27-year-old male presents with B-symptoms, myalgias, decreased urine output, nausea, vomiting, LUQ abdominal pain, loss of appetite, shortness of breath with exertion that has been going on for the past 4 days. He went to urgent care prior to arrival to the ED. Vital signs show a fever of 103, HR 132, RR 28, BP 120/80.

- Familial History: DVT/PE history, remote possible familial history of stroke and breast cancer
- Social History: Denies cigarette use. Rare alcohol use. Confirms occasional marijuana use. Enjoys working outdoors. States that he works at a food bank.
- Physical Exam: hepatosplenomegaly
- Labs: elevated anion gap, mild lactatemia, transaminitis, and low hemoglobin with MCV within normal limits
- CXR showed no pulmonary nodules.
- Urinalysis was negative for leukocyte esterase and nitrites.
- Renal ultrasound confirmed hepatosplenomegaly.
- Given concern for sepsis, blood cultures were ordered and piperacillin-tazobactam was administered.

Imaging

<table>
<thead>
<tr>
<th>CBC Results</th>
<th>Range</th>
<th>Imaging</th>
<th>Lab</th>
<th>Result</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>WBC 7.5</td>
<td>4-11</td>
<td></td>
<td>Iron</td>
<td>28</td>
<td>59-158</td>
</tr>
<tr>
<td>RBC 2.75</td>
<td>4.5-6</td>
<td></td>
<td>TIBC</td>
<td>310</td>
<td>250-400</td>
</tr>
<tr>
<td>Hb 13.4</td>
<td>14-17</td>
<td></td>
<td>Iron Saturation</td>
<td>9%</td>
<td>20-55%</td>
</tr>
<tr>
<td>Hct 24.1</td>
<td>42-52</td>
<td></td>
<td>Ferritin</td>
<td>4581</td>
<td>30-400</td>
</tr>
<tr>
<td>MCV 88</td>
<td>80-99</td>
<td></td>
<td>LDH</td>
<td>874</td>
<td>135-225</td>
</tr>
<tr>
<td>MCH 48.7</td>
<td>26-34</td>
<td></td>
<td>Haptoglobin</td>
<td>&lt;10</td>
<td>30-200</td>
</tr>
<tr>
<td>MCHC 55.6</td>
<td>32-37.5</td>
<td></td>
<td>Immature Retic Fraction</td>
<td>15.2%</td>
<td>0-12.5%</td>
</tr>
<tr>
<td>RDW 14.9</td>
<td>11.5-14.5</td>
<td></td>
<td>Total bilirubin</td>
<td>2.4</td>
<td>0.1-0.9</td>
</tr>
<tr>
<td>Platelet 153</td>
<td>140-400</td>
<td></td>
<td>Direct bilirubin</td>
<td>1.4</td>
<td>0-0.3</td>
</tr>
</tbody>
</table>

Cold Agglutinin Titer 1:160
Direct Antiglobulin Coombs Test: negative
Mononucleosis screen positive
EBV Early Antigen: IgM positive

Unique Aspects

- CAS is a rare complication in EBV infection which can ultimately affect the appropriate treatment.
- Additionally, patients with hemolytic anemia seldom have high ferritin levels, raising its validity as a crucial biomarker of severe disease.
- The patient does not fit the typical demographic of patients who develop cold agglutinin hemolytic anemia.

Conclusions

- CAS should be evaluated in patients with infectious mononucleosis that have low hemoglobin.
- Understanding the mechanism of action is important to understand the pathophysiology of CAS in patients with viral infections.
- Elevated ferritin may be a good indicator of prognosis with cold agglutinin disease secondary to infectious mononucleosis.

References