Introduction

- Dabigatran is a renally excreted direct thrombin inhibitor that is commonly used for thromboembolic prophylaxis in patients with non-valvular atrial fibrillation.
- Severe hemorrhage, a potential side effect, has been reported to occur in less than 6% of dabigatran users.
- The impact of COVID-19 infection and resulting coagulopathies on bleeding risk in patients taking dabigatran is currently unknown.
- We describe the case of an elderly female on dabigatran with COVID-19 infection who presented with hematuria that precipitated hemorrhagic shock.

Case Description

- A 79-year-old female with a past medical history of atrial fibrillation on dabigatran presented to the ED with acute blood loss anemia.
- Physical exam was significant for a palpable suprapubic mass.
- Initial vitals were the following: BP 82/41 mmHg, HR 60 bpm, RR 13/min, T 35.6°C, SpO2 98% on room air
- Initial laboratory tests were significant for elevated PT, PTT, INR, and fibrinogen as well as elevated BUN and creatinine (Table 1).
- A peripheral blood smear was negative for schistocytes.
- Abdominal CT demonstrated severe urinary bladder distention (Figure 1).
- Given the patient’s bladder distention, a urinary catheter was inserted. Upon catheter insertion, a significant amount of blood rushed out.
- The patient was given dabigatran reversal agent idarucizumab, vitamin K injection, multiple units of prothrombin complex concentrate, and packed red blood cells.
- Bleeding was controlled after 72 hours of care in the ICU.
- The patient’s course was complicated by severe hypoxemia requiring vasopressor and ventilator support. This was likely due to transfusion-related acute lung injury and COVID pneumonia.
- The patient’s progressive deterioration, the family opted for hospice care and the patient passed away 34 days after initial presentation.

Discussion

- This patient experienced severe bleeding that led to hemorrhagic shock.
- The patient’s lab results were not consistent with disseminated intravascular coagulation or thrombotic thrombocytopenic purpura and she was not known to have any baseline hypercoagulable disorder.
- Thus, the patient’s symptoms were most likely due to dabigatran-induced bleeding.
- The patient may have been at increased risk for adverse bleeding due to age, acute renal disease, and an underlying coagulopathy in the setting of acute COVID-19 infection.
- Approximately 85% of dabigatran is excreted renally, and reduced kidney function can increase the half-life of this medication which increases the risk of bleeding.
- However, even in patients who experience dabigatran-related hemorrhage, prolonged bleeding after therapeutic intervention (i.e., idarucizumab) is unusual as the effects of the reversal agent usually take effect within minutes of administration.
- COVID-19 infections have been linked to coagulopathies and infected patients have an increased risk of both thrombosis and bleeding, which may have contributed to this patient’s clinical outcome.

Table 1

<table>
<thead>
<tr>
<th>Lab</th>
<th>Value</th>
<th>Reference Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>White blood cell count</td>
<td>15.4 x 10^9/UL</td>
<td>4.5-11.0 x 10^9/UL</td>
</tr>
<tr>
<td>Platelets</td>
<td>383 x 10^3/UL</td>
<td>150-400 x 10^3/UL</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>7.8 g/dL</td>
<td>12.0-16.0 g/dL</td>
</tr>
<tr>
<td>Prothrombin Time</td>
<td>&gt;86 seconds</td>
<td>11-15 seconds</td>
</tr>
<tr>
<td>Partial Thromboplastin Time</td>
<td>&gt;130 seconds</td>
<td>25-40 seconds</td>
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<tr>
<td>INR</td>
<td>&gt;10.0</td>
<td>≤11.1</td>
</tr>
<tr>
<td>D-dimer</td>
<td>0.52 Ug/mL</td>
<td>0.25-0.25 Ug/mL</td>
</tr>
<tr>
<td>Fibrinogen</td>
<td>169 mg/dL</td>
<td>200-400 mg/dL</td>
</tr>
<tr>
<td>BUN</td>
<td>127 mg/dL</td>
<td>7-18 mg/dL</td>
</tr>
<tr>
<td>Creatinine</td>
<td>3.5 mg/dL</td>
<td>0.6-1.2 mg/dL</td>
</tr>
<tr>
<td>COVID-19 RNA</td>
<td>Positive</td>
<td></td>
</tr>
<tr>
<td>Schistocytes</td>
<td>Negative</td>
<td></td>
</tr>
</tbody>
</table>

Imaging

Figure 1: Abdominal CT demonstrating severe bladder distention.

References