

# Dabigatran Induced Hemorrhagic Shock in a Covid 19-Positive Patient

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## 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<sup>1</sup>.
- 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.
- Given the patient's progressive deterioration, the family opted for hospice care and the patient passed away 34 days after initial presentation.

Table 1

### Initial lab results

Lab	Value	Reference Range
White blood cell count	15.4 10 <sup>3</sup> /UL	4.5-11.0 10 <sup>3</sup> /UL
Platelets	383 10 <sup>3</sup> /UL	150-400 10 <sup>3</sup> /UL
Hemoglobin	7.8 g/dL	12.0-16.0 g/dL
Prothrombin Time	>86 seconds	11-15 seconds
Partial Thromboplastin Time	>130 seconds	25-40 seconds
INR	>10.0	≤1.1
D-dimer	0.52 Ug/mL	≤0.25 Ug/mL
Fibrinogen	169 mg/dL	200-400 mg/dL
BUN	127 mg/dL	7-18 mg/dL
Creatinine	3.5 mg/dL	0.6-1.2 mg/dL
COVID-19 RNA	Positive	-
Schistocytes	Negative	-

## Imaging



Figure 1: Abdominal CT demonstrating severe bladder distention.

## 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<sup>2</sup>.
- 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<sup>3</sup>.
- 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.

## Conclusion

- This case has clinical relevance as dabigatran has been suggested by some as an anticoagulant of choice in patients with non-valvular atrial fibrillation and COVID-19 infection<sup>4</sup>.
- However, in our patient, COVID-19 infection may have been a contributing factor to her prolonged hemorrhaging.
- This case highlights the importance of kidney function monitoring in patients taking dabigatran and anticoagulant selection in high-risk patient populations.

## References

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