

# Rectus Sheath Hematoma in a Patient with Dual-Antiplatelet Therapy Including Ticagrelor: A Case Report

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## Abstract

Rectus sheath hematoma (RSH) is an uncommon cause of abdominal pain associated with several risk factors including trauma, asthma, chronic obstructive pulmonary disease, pregnancy, and anticoagulation as it can be iatrogenic. Dual-antiplatelet therapy (DAPT), combined usage of a P<sub>2</sub>Y<sub>12</sub> receptor inhibitor and aspirin, is a cornerstone treatment for patients with acute coronary syndromes. Ticagrelor is a P<sub>2</sub>Y<sub>12</sub> receptor inhibitor with several adverse hemorrhagic complications. An 86-year-old male patient was admitted to the emergency department with abdominal pain and a palpable abdominal mass at the left upper quadrant of the abdomen. His medical history revealed coronary artery disease with medications including acetylsalicylic acid and ticagrelor. Contrast-enhanced abdominal computed tomography revealed RSH. The patient was treated conservatively with bed rest and analgesia. DAPT is an essential component of the management of acute coronary syndromes to prevent recurrent cardiac thrombotic events. However, hemorrhagic complications such as RSH may be encountered with DAPT. Emergency medicine physicians and cardiologists should keep in mind RSH in patients presenting with abdominal pain and using DAPT with ticagrelor.

## Keywords

- ▶ dual-antiplatelet therapy
- ▶ hemorrhage
- ▶ rectus abdominis
- ▶ ticagrelor

## Introduction

Ticagrelor is an oral antiplatelet agent exhibiting its effects by reversibly binding to platelet ADP P<sub>2</sub>Y<sub>12</sub> receptors to prevent platelet activation and aggregation. Dual-antiplatelet therapy (DAPT), combined with a P<sub>2</sub>Y<sub>12</sub> receptor inhibitor and aspirin, is a cornerstone treatment for patients with acute coronary syndromes.<sup>1</sup> Several hemorrhagic complications including intracranial, gastrointestinal, urinary, pulmonary, retroperitoneal, intra-articular, and subcutaneous bleeding have been reported with ticagrelor treatment.<sup>2</sup>

Rectus sheath hematoma (RSH) is an uncommon cause of abdominal pain resulting from accumulated blood within the rectus sheath. It may be seen in up to 1.8% of patients with

abdominal pain.<sup>3</sup> Several risk factors including older age, female sex, trauma, asthma, chronic obstructive pulmonary disease (COPD), pregnancy, and anticoagulation have been associated with the formation of RSHs as it can be iatrogenic.<sup>4</sup> In this case report, we present a case of RSH associated with DAPT including ticagrelor.

## Case Report

An 86-year-old male patient was admitted to the emergency department with abdominal pain with a palpable abdominal mass at the left upper quadrant of the abdomen. His medical history revealed hypertension, coronary artery disease,

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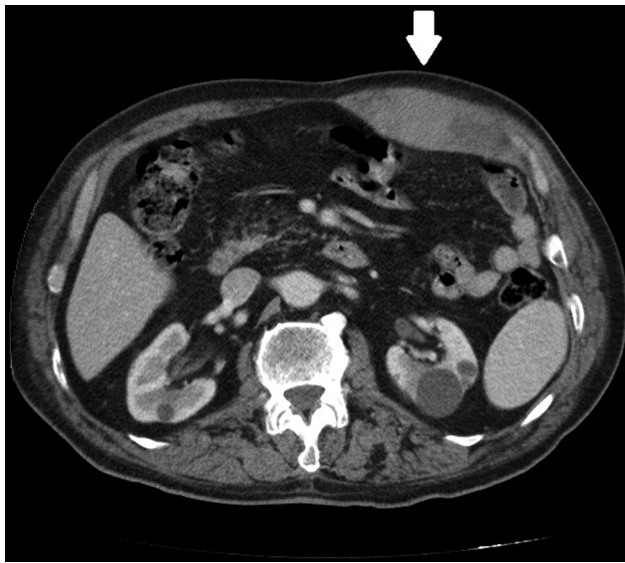
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**Fig. 1** Contrast-enhanced abdominal computed tomography finding of left rectus sheath hematoma (arrow).

hypercholesterolemia, COPD, and no recent trauma or surgery. He has no COPD exacerbations like increased sputum, cough, or rhonchi in physical examination. His medications were acetylsalicylic acid 100 mg/day, metoprolol 50 mg twice daily, ramipril 5 mg/day, atorvastatin 40 mg/day, and ticagrelor 90 mg twice a day due to acute myocardial infarction. One month ago the patient was diagnosed with acute anteroseptal myocardial infarction and a stent was implanted into the left anterior descending artery. His vital signs on the current admission were temperature: 36.5 °C, heart rate: 78 beats/min, blood pressure: 140/80 mm Hg, and respiration: 16 times per minute. His physical examination revealed a palpable and tender abdominal mass in the left upper quadrant of the abdomen. Laboratory results were hemoglobin: 11.9 g/dL, platelets: 184,000/mL, activated partial thromboplastin time: 30.6 seconds, and prothrombin time: 12.5 seconds (INR: 1.1). Contrast-enhanced abdominal computed tomography (CT) revealed a hematoma in 5 × 3 cm dimensions in the left rectus sheath (→Fig. 1). The patient's status remained hemodynamically stable without any significant change in vital signs, and serially measured hemoglobin and hematocrit levels did not decrease during the follow-up in the emergency department. Therefore, DAPT was not withheld. He was treated conservatively with bed rest, ice compression, and analgesia. After 3 days of follow-up in the emergency department, the patient was discharged with recommendations such as bed rest, and analgesia and told to admit to the emergency department if the hemorrhagic mass might expand. There was no admission about the complication during the next month.

## Discussion

RSH may mimic a range of acute abdominal pathologies, requiring increased suspicion, timely diagnostic evaluation, and management. RSH often presents as acute abdominal pain with a palpable mass. Patients may also present with

signs of hypovolemic shock based on the amount of bleeding. The diagnosis of RSH can be confirmed by either ultrasonography or abdominopelvic CT. Abdominopelvic CT reveals accurate information about the location, size, and extension of the RSH.<sup>4,5</sup> Abdominopelvic CT has excellent sensitivity and specificity in terms of diagnosis of RSH and is useful for excluding other abdominal pathologies.<sup>4</sup>

Management of RSH is determined by the patient's clinical status, the underlying cause of the RSH, and the severity of the RSH. A vast majority of patients are hemodynamically stable and treated conservatively with analgesia, bed rest, compression of the hematoma, and reversal of anticoagulation when appropriate. Packed red blood cells and appropriate blood products should be transfused if necessary. As Warren et al emphasized, patients with hypovolemic shock should be resuscitated aggressively and promptly referred for either angiography or surgery to control the source of bleeding.<sup>4,6</sup>

Anticoagulation therapy and antiplatelet therapy are common risk factors reported for RSH.<sup>7,8</sup> In the retrospective study of Sheth et al ( $n=114$ ), warfarin ( $n=42$ ), unfractionated heparin ( $n=37$ ), low-molecular-weight heparin ( $n=17$ ), and antiplatelet therapy— aspirin or clopidogrel—( $n=34$ ) were the most causative agents for RSH.<sup>7</sup> Several cases of RSHs have been reported due to DAPT consisting of aspirin and clopidogrel.<sup>7,9</sup> DAPT including ticagrelor provides a stronger antithrombotic effect, although rare bleeding conditions such as omental bleeding, hepatic subcapsular hematoma, and RSH may be encountered with DAPT.<sup>10,11</sup> Furthermore, a case of multifocal muscular bleeding during DAPT including aspirin and ticagrelor has been reported.<sup>12</sup> To the best of our knowledge, our case is the first report of isolated RSH in a patient using DAPT including ticagrelor.

## Conclusion

RSH may mimic a range of acute abdominal pathologies, requiring increased suspicion, timely diagnostic evaluation, and management. Rare bleeding such as RSH may be encountered with DAPT. Emergency medicine physicians and cardiologists should consider RSH in patients presenting with abdominal pain and using DAPT with ticagrelor.

## Conflict of Interest

The authors declare that they have no conflict of interest.

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