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Visual Diagnosis Pearl

Anticoagulant-Associated Chest Wall Hematoma After Resistance Training in an Elderly Patient

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CASE PRESENTATION

An 88-year-old male with a history of atrial flutter on chronic rivaroxaban 20 mg daily presented with swelling and pain involving the right lateral chest and posterior thorax. Three days prior, he had initiated resistance and balance training using elastic exercise bands to strengthen his upper extremities. This represented his first structured exercise session in a prolonged period. He denied any fall, direct trauma, or injury to the chest wall or upper extremities.

On examination, there was marked asymmetric swelling of the right lateral and posterior thorax (Fig. 1).

He was unable to fully elevate his right arm due to pain and soft tissue fullness. He denied chest pain, dyspnea, or systemic symptoms.

A right rib series and posteroanterior chest radiograph demonstrated mild asymmetric soft tissue swelling of the right lateral chest wall without rib fracture. Due to persistent symptoms, a CT scan of the chest, abdomen, and pelvis with contrast was performed. Abdominal and pelvic imaging was unremarkable. The chest CT revealed a 6.7 × 1.9 cm region of heterogeneous attenuation within the posterior right chest wall, external to the ribs, consistent with a chest wall hematoma. CT imaging is considered the primary

modality for identifying and characterizing anticoagulant-associated hemorrhagic complications, including thoracic wall muscular hematomas.

Ten days after the initial evaluation, repeat examination demonstrated improved thoracic swelling but new extensive ecchymosis extending from the right flank to the right mid-abdomen (Fig. 2) and genital region (Fig. 3), predominantly involving the right testicle. The contralateral side was spared. This distribution was consistent with gravitational tracking of blood products from the resolving posterior chest wall hematoma. Serial laboratory monitoring demonstrated no significant decline in hemoglobin or hematocrit. The patient remained hemodynamically stable.

Management was conservative. He was advised to discontinue resistance band exercise and avoid strenuous upper-extremity activity. Over-the-counter nonsteroidal anti-inflammatory drugs were avoided. Low-dose aspirin (81 mg daily) was discontinued to reduce additive bleeding risk, while rivaroxaban 20 mg daily was continued given the absence of hemodynamic instability, progressive anemia, or



Figure 1. Illustrates the asymmetry of swelling in the right posterior thorax.



Figure 2. Right flank to right mid-abdomen ecchymosis.

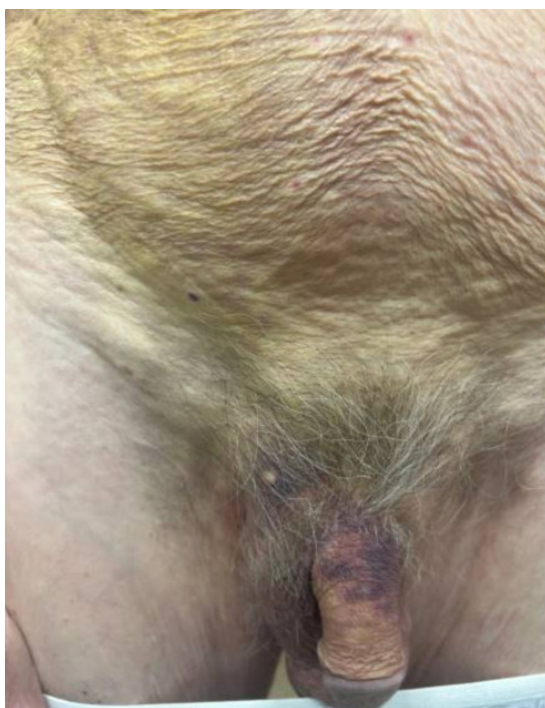


Figure 3. Ecchymoses genital region predominantly involving the right testicle.

ongoing bleeding. Over subsequent weeks, the swelling and ecchymosis resolved spontaneously without complication.

DISCUSSION

This case illustrates a posterior chest wall hematoma likely precipitated by resistance band-induced muscle strain in an elderly patient receiving rivaroxaban. Although the patient denied overt trauma, eccentric loading of deconditioned musculature may result in microtearing and intramuscular bleeding, which can be amplified in the setting of therapeutic anticoagulation. Advanced age independently increases bleeding risk in anticoagulated patients.

Computed tomography is the primary imaging modality for identifying and characterizing anticoagulant-associated hemorrhagic complications, including thoracic and abdominal wall muscular hematomas.¹ In this case, CT confirmed a 6.7 × 1.9 cm heterogeneous lesion within the posterior

right chest wall, external to the ribs, consistent with hematoma.

Rivaroxaban is a selective direct factor Xa inhibitor that decreases thrombin generation and clot formation.² Bleeding is the most common adverse effect of rivaroxaban therapy.² In clinical trials involving patients with atrial fibrillation and venous thromboembolism, major bleeding has been defined as clinically overt bleeding associated with a hemoglobin decrease ≥ 2 g/dL, transfusion requirement, bleeding at a critical site, or fatal outcome.³ This patient did not meet criteria for major bleeding, as he remained hemodynamically stable without significant hemoglobin decline or critical organ involvement. His presentation is best categorized as a clinically relevant non-major bleed.

Management of non-life-threatening bleeding in patients receiving factor Xa inhibitors is generally supportive. Guidance from large clinical trial protocols indicates that temporary discontinuation of rivaroxaban is expected to control bleeding in most cases because of its relatively short half-life (approximately 5–13 hours), with local measures and supportive care provided as needed.³ Reversal strategies are typically reserved for life-threatening or uncontrolled hemorrhage.

This case highlights several important clinical considerations. First, elderly patients initiating new resistance training may be vulnerable to soft tissue injury, and anticoagulation can significantly amplify bleeding from otherwise minor musculoskeletal trauma. Second, delayed ecchymosis tracking to dependent regions such as the flank and genitalia may occur as blood products redistribute gravitationally during hematoma resorption, which may be alarming but does not necessarily indicate ongoing hemorrhage. Third, individualized assessment of thromboembolic versus bleeding risk remains central when determining whether to interrupt or continue anticoagulation.

In stable patients without progressive anemia, hemodynamic instability, or radiographic evidence of expansion, conservative management with activity modification and medication review is appropriate. Ongoing reassessment of bleeding and thrombotic risk remains essential in elderly individuals receiving chronic direct oral anticoagulant therapy.



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