Phlegmasia cerulea dolens (PCD) is a rare entity that is associated with significant morbidity and mortality, including limb ischemia and pulmonary embolism. Point-of-care ultrasound (POCUS) can expedite the diagnosis, leading to earlier life- and limb-saving treatment. Although primarily used for assessing for the presence of deep venous thrombosis, in the appropriate clinical setting POCUS can also be used to diagnosis PCD as well as to distinguish between venous and arterial occlusion, which can lead to a difference in management. We present a case of phlegmasia cerulea dolens after mild trauma in a patient with an underlying hypercoagulability disorder diagnosed by an emergency physician using POCUS, which expedited treatment with catheter-directed thrombolytic therapy.

INTRODUCTION

Phlegmasia cerulea dolens (PCD), or massive proximal venous thrombosis of the lower extremity, is a rare entity that is associated with significant morbidity and mortality, necessitating rapid diagnosis and treatment. Point-of-care ultrasound (POCUS) can expedite the diagnosis, leading to earlier life- and limb-saving treatment. PCD is most often associated with hypercoagulable states, but can be precipitated by trauma. We present a case of phlegmasia cerulea dolens after mild trauma in a patient with an underlying hypercoagulability disorder diagnosed by an emergency physician using POCUS, which expedited treatment with catheter-directed thrombolytic therapy.

CASE REPORT

A 21-year-old female college student presented to the emergency department (ED) with severe pain in her left hip, thigh, and calf. The pain started suddenly when she was playing basketball a few hours earlier. She twisted her torso to shoot the ball and heard a “pop” in her left hip with immediate onset of pain, and she subsequently fell to her knees. She was initially able to ambulate but had worsening pain and rapid progression of swelling and mottling in the left leg from her hip to her ankle. She denied any pain or swelling in that extremity prior to the injury during the basketball game. With the exception of oral contraceptive use, she had no significant medical or family history.

On examination her left extremity was mottled, dusky, and cool to the touch from the hip to the toes and she had decreased dorsalis pedis and posterior tibial pulses when compared with the right extremity. The leg was markedly tender to palpation and sensation to light touch was diminished. Passive range of motion of the hip, knee, and ankle elicited severe pain.

POCUS was performed at the bedside to evaluate for arterial blood flow and deep venous thrombosis. This demonstrated normal color flow in the femoral and popliteal arteries (Image 1), but echogenic material was noted within the left common femoral vein extending distally to the popliteal vein and the veins were non-compressible (Images 2A and 2B). Vascular surgery was immediately consulted, and while awaiting their arrival to the ED the patient was sent for an emergent computed tomography (CT) angiogram, which confirmed arterial patency and extensive deep venous thrombosis in the left popliteal, femoral, and iliac veins (Image 3). A heparin bolus was given and the patient was...
then taken to interventional radiology where she underwent partial thrombectomy, catheter-directed tissue plasminogen activator (tPA) treatment, and placement of an inferior vena cava (IVC) filter. By the next morning her leg was noted to be well-perfused, non-tender, and without swelling, and her pain had resolved. A workup for hypercoagulable states revealed heterozygosity for the Factor V Leiden mutation. She was discharged one week later on warfarin after bridging from enoxaparin.

**DISCUSSION**

PCD is a rare form of deep venous thrombosis in which acute massive proximal venous thrombosis results in obstruction of the venous drainage of an extremity. Symptoms include sudden severe pain, swelling, edema, and cyanosis, leading

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*Image 1.* Point-of-care ultrasound demonstrating complete thrombotic occlusion of the femoral vein. In this still image, application of color Doppler shows normal flow through the femoral artery (black arrow) but absence of flow in the femoral vein. Echogenic material is visualized within the femoral vein (white arrow).

*Image 2A and 2B.* Point of care ultrasound demonstrating extensive venous thrombosis of the left lower extremity. In image 2A, echogenic material is seen within the left common femoral vein (white arrow) and the greater saphenous vein (dashed white arrow). In image 2B, more echogenic material was visualized distally within the popliteal veins (black arrows).

*Image 3.* Axial view of computed tomography angiogram at the level of the common femoral artery and vein. The femoral artery is patent (white arrow) while the common femoral vein is distended and filled with clot (red arrow).
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CONCLUSION

PCD is a rare disease with significant morbidity and mortality. Early diagnosis and treatment is necessary to prevent severe complications such as limb ischemia or massive pulmonary embolism. Point of care ultrasound can facilitate earlier diagnosis of significant vascular pathology, including phlegmasia cerulea dolens.

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REFERENCES


