

Un caso raro de enfermedad tromboembólica venosa detectada con la exploración física potenciada por ecografía clínica

A rare case of venous thromboembolic disease detected with pocus augmented clinical exam

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ABSTRACT

Ultrasound is a useful complementary tool in physical exam, and among its different indications, it is a relatively new imaging technique for the diagnosis of thromboembolic disease, offering a rapid, non-invasive, and easily accessible. Allowing the simultaneous detection of right ventricular dysfunction, the presence of venous thrombosis, as well as improving the remaining physical exam. It appears to be a useful tool to assist in the evaluation, treatment and monitoring the evolution of the patient with venous thromboembolic disease. In our present report, it allowed us to discover a persistent urinary retention and a previously undiagnosed secondary venous thrombosis, which most likely formed due to the increase in venous pressure induced by the distended bladder, and thus facilitated the performance of various procedures to treat appropriately to the patient.

Keyword: Point-of-care ultrasound augmented clinical exam, urine retention, DVT, prostatic hyperplasia, venous thrombosis, pulmonary embolism.

RESUMEN

Como es sabido, la ecografía es una herramienta complementaria muy útil en la exploración, y entre otros muchos usos, es una técnica de imagen relativamente novedosa para el diagnóstico de la enfermedad tromboembólica, ofreciendo una evaluación rápida, no invasiva, y de fácil acceso en una gran variedad de escenarios clínicos. En particular, permite la detección simultánea de la disfunción del ventrículo derecho y la presencia de trombosis venosa, así como la mejora del examen físico restante, por lo que parece ser una herramienta útil para ayudar en la evaluación y el tratamiento del paciente con enfermedad tromboembólica venosa. De hecho, en el presente reporte, permitió descubrir una distensión vesical persistente y una trombosis venosa secundaria no diagnosticada previamente que muy probablemente se formó debido al aumento de la presión venosa inducida por la vejiga, y así facilitó la realización de diversos procedimientos para tratar adecuadamente al paciente.

Palabras clave: Examen clínico aumentado por ecografía clínica, retención urinaria, TVP, hiperplasia prostática, trombosis venosa, embolia pulmonar.

INTRODUCTION

Pulmonary embolism (PE) is the obstruction of one or more lung arteries by thrombus, tumor tissue, air, or fat. Approximately 90% of cases, the cause is deep vein thrombosis (DVT), where the thrombus travels from the veins to the lungs' arteries¹. These thrombi are usually formed in the context of at least one of three factors known as Virchow's Triad: blood flow stasis, endothelial injury, or hypercoagulability. Therefore, any factor that promotes one or more of Virchow's Triad processes can induce thrombus formation².

Obstruction is the most frequent cause of urinary retention³. Although bladder distention can also obstruct pelvic veins because of increased venous pressure and subsequently cause DVT, it is a rare cause of PE, even though there have been a few cases reported.¹

We describe the case where the use of clinical ultrasound as the fifth pillar of physical examination (Point-of-Care Ultrasound Augmented Clinical Exam) in an acute PE allowed us to detect a new DVT attributable to bladder distension due to urinary retention.

CASE REPORT

A 65-year-old man with a medical history of hypercholesterolemia and Benign Prostatic Hyperplasia (BPH) was admitted to the emer-

gency department complaining of gradual urine decrease and a distended abdomen over the previous month. His vital signs showed a blood pressure of 155/95 mmHg, a heart rate of 135 bpm, and a peripheral oxygen saturation of 90% on room air. Physical examination revealed a palpable and non-mobile abdominal mass with no other notable modifications. He had no lower limb edema or other symptoms of deep venous thrombosis.

X-rays of the chest and abdomen revealed no abnormalities except for an area of increased density in the abdomen, measuring 20-25 centimeters (cm). A Computed Tomography Angiography (CTA) of the chest and abdomen was done to clarify the findings, which revealed signs of acute pulmonary embolism (PE) on the right lung lobes, a dilated bladder, and a non-obstructive thrombosis of the left renal vein. In this case, prompt anticoagulation was started, and bladder catheterization was conducted.

On the ward, as a complement to the physical examination, POCUS augmented examination was executed, which showed bilateral hydronephrosis associated with the maintenance of bladder distension (Figure 1) without intravesical catheter visualization. A DVT was also identified in the left posterior tibial vein (Figure 2) that had not caused clinical symptoms nor been seen by previous exams. In this context, a bladder catheter of a smaller diameter was used, with a

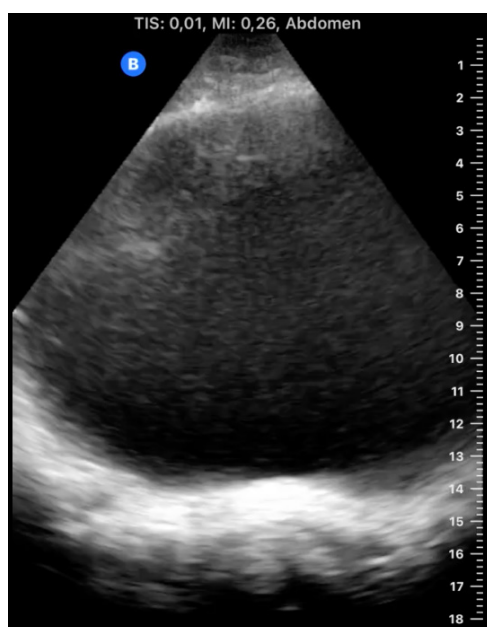


Figure 1. Ultrasound of the distended bladder.

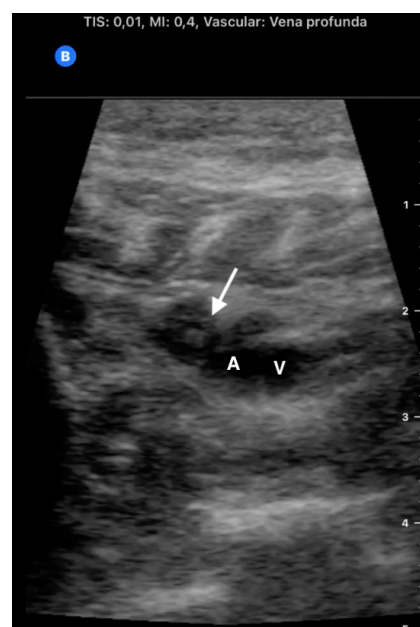


Figure 2. Left posterior tibial vein thrombosis (arrow), A: tibial posterior artery, V: tibial posterior vein (not thrombosed).

subsequent output of clear urine (total urine volume evacuated was 10 liters), and anticoagulation therapy was maintained.

DISCUSSION

Acute PE remains a significant cause of morbidity and mortality. Therefore, early diagnosis and prompt intervention are paramount, as most deaths occur within the first several hours or days⁴. Furthermore, it's important to find the cause of PE so that the proper treatment can be initiated.

Urinary retention is the inability to voluntarily void an adequate amount of urine. The main causes are obstructive (BPH accounts for 53% of all cases), infectious/inflammatory, iatrogenic, and neurologic. To confirm urine retention, a physical examination and/or imaging should be performed, and then catheterization must be performed to allow bladder drainage³. When urinary retention occurs, bladder walls distend predominantly in a superior and posterior direction, making it possible to compress the iliac veins, with the left common iliac vein being more susceptible to being affected.

There have been several case reports of pelvic vascular structure compression as a consequence of an enlarged bladder, but few reports of cases resulting in DVT and PE². A review of the literature revealed five cases of thrombosis following urinary retention. The first reported case of venous thromboembolism (VTE) related to bladder distention was described in a pediatric patient in 1960. The patient was a three-week-old child with a urethral valve. All other patients were males above the age of 68 years-old.⁵

PE is related with 20% to 40% of DVTs. In the reported case, using POCUS augmented examination as the fifth pillar of the physical exam was an essential procedure because it allowed the patient to realize that, even though he was already taking the correct medication for the PE, he still had a risk factor for increased thromboembolic risk and to find a DVT that could initiate a new PE event.

Given that POCUS augmented examination allows for the simultaneous detection of RV dysfunction and the presence of DVT, as well as the enhancement of the remaining physical examination, it appears to be useful tool to aid in patient evaluation and management, as demonstrated in this case report. Indeed, POCUS enabled the discovery of persistent bladder distension and a previously undiagnosed DVT, which most likely formed because of the increased venous pressure induced by the bladder, and so facilitated the performance of various procedures to appropriately manage the patient.

CONFLICTS OF INTEREST

None to declare.

SOURCE OF FUNDING

No sponsoring or source of funding to declare.

ETHICAL ASPECTS

All participants submitted a consent form to be included in this study.

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