

Point-of-care ultrasonography role in detecting inferior vena cava thrombosis in a patient with low back pain: a case report

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ABSTRACT

A 73-year-old woman arrived at the ER claiming to be experiencing low back pain. To investigate the source of her pain, she was admitted to the Internal Medicine department. After a heterogeneous abdominal mass in the right upper quadrant was discovered by abdominal point-of-care ultrasonography (POCUS), it was confirmed by an abdominal CT scan, which also identified a metastatic lytic bone lesion in the L4. This finding is consistent with a malignant tumor of the right adrenal gland. POCUS was repeated right after the occurrence of dyspnea, and a 40x6 mm floating thrombus in the inferior vena cava was detected. A conservative approach with anticoagulants was chosen, with improvement of the clinical conditions. The diagnosis of adrenal carcinoma was ultimately made possible by the mass biopsy. POCUS is a safe, low-cost method that provides prompt results at the patient's bedside. We support the implementation of POCUS in all clinical departments, as it provides significant contributions to the assessment of prognosis and diagnosis.

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Introduction

The use of point-of-care ultrasonography (POCUS) is nowadays increasingly growing in clinical departments, most of which are always more often equipped with even more portable devices.

In this case report we want to stress the importance of performing an ultrasound examination at the bedside of the patient, helping the physician to simply and quickly confirm or reject clinical diagnostic hypothesis.

Case report

A 73-year-old woman presents at the emergency department, complaining of low back pain.

Her clinical history includes arterial hypertension, dyslipidemia, chronic peripheral vascular disease with *claudicatio intermittens*, hypothyroidism, osteoporosis, mild chronic obstructive pulmonary disease, active smoking and moderate daily alcohol consumption.

In 2019, an abdominal computed tomography (CT) showed bilateral adrenal adenomas, with negative hormonal study at that time.

The patient was hospitalized in early 2022 in intensive care unit and internal medicine ward due to severe COVID-19 and a CT was repeated, showing a slight raise in volume of the right adrenal gland. During hospitalization, she was also diagnosed with lymphoplasmacytic lymphoma through a bone marrow biopsy.

An abdominal magnetic resonance imaging was performed in October 2022. A solid right adrenal lesion of 32 mm was detected and the differential diagnosis included lymphoma infiltration or collision tumor of the adrenal gland. The repetition of the hormonal study was scheduled, but the patient voluntarily was lost to follow-up.

Back to the present day, the patient reported colic right

low back pain, irradiated to genitals and right lower limb. The pain increased with movements and urinary discomfort was reported. She was prescribed Phosphomycin by her general practitioner and a cycle of Norfloxacin was prescribed after no improvement. Due to pain persistence, she presented at the emergency department (ED), and she was discharged with analgesia, but, 2 days later, she came back at the ED for the same unresolved pain.

At the ED, a lumbar spine X-ray was performed, with the only finding of severe lumbar arthrosis and aortic calcification, with no aneurysmatic dilatation. The blood tests were unremarkable; the urinalysis showed the presence of leukocytes and nitrites. The patient was admitted to the internal medicine department in order to study the cause of the back pain. An abdominal POCUS performed by an internist, and a subsequent comprehensive examination performed at the radiology department revealed the presence in the right upper quadrant of a heterogeneous abdominal mass (dimensions 65x52x68mm) (Figure 1), compatible with a malignant tumor of the right adrenal gland.

The patient therefore underwent an abdominal CT that confirmed the right adrenal mass, with possible infiltration of the right kidney, going into differential diagnosis with adrenal

adenocarcinoma, pheochromocytoma or metastatic lesion. Furthermore, a metastatic lytic bone lesion was detected in the L4 vertebral posterior body, invading the anterior epidural space, conditioning stenosis of the spinal cord canal.

A few hours after the CT was performed, the patient suddenly started complaining of dyspnea and a POCUS was immediately repeated. A 40x6 mm floating thrombus, partially adhered to inferior vena cava wall was detected (Figure 2). There were no signs of deep vein thrombosis in the lower extremities.

The patient was urgently transferred to the cardiac surgery department of a third-level center for an invasive thrombectomy evaluation. Due to the high surgical risk because of the multiple comorbidities, a conservative approach with anticoagulants was chosen, with improvement of the clinical condition. The biopsy of the mass was therefore performed and the diagnosis of adrenal carcinoma with metastatic bone lesions was made. The oncologist did not consider appropriate a systemic chemotherapeutic treatment and, after receiving a palliative radiotherapy treatment of the column, she was transferred to a palliative care unit.

Discussion and Conclusions

POCUS is a harmless, low cost technique and it is fast to perform in well-trained hands, giving immediate answers at the bedside of the patient.¹

The role of POCUS is growing more and more, being adopted by a wide range of specialties, including critical care, internal medicine, anesthesia, hospital medicine, and pediatrics.²

In this clinical case, the role of POCUS was definitely decisive in helping to make the diagnosis, establishing an immediate therapeutic plan allowing a quick allocation to a third-level center for evaluation and identifying prognosis. Indeed, a study demonstrates that the prognosis is poorer in patients with adrenocortical carcinoma (ACC) complicated by inferior vena cava tumor thrombus, compared to those without thrombosis,³ not being a frequent presentation of the ACC.⁴

In conclusion, we encourage the spread of knowing and practicing POCUS in all clinical departments as a fast, immediate, and harmless exam, contributing significantly to the diagnostic and prognostic process of the clinical physician.

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Figure 1. Heterogeneous abdominal mass in the right upper quadrant.



Figure 2. Floating thrombus partially adhered to inferior vena cava wall.