

Pulmonary embolism in a patient with chronic pulmonary disease: point-of-care ultrasound makes the difference

Tromboembolia pulmonar en paciente con enfermedad pulmonar crónica: UPA hace la diferencia

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Abstract

Pulmonary embolism (PE) and pulmonary hypertension (PH) are serious conditions frequently encountered in emergency settings. Early diagnosis and timely treatment are crucial to improve patient outcomes and survival. Acute right ventricular dysfunction, observed in echocardiographic findings, can aid in diagnosing PE and accelerate the acquisition of definitive imaging in unstable patients. A 52-year-old female patient with systemic sclerosis and pulmonary fibrosis, treated with mycophenolate, steroids, and sildenafil for pulmonary hypertension, presented with right pelvic limb edema. A Doppler study revealed femoral thrombosis, and anticoagulation was initiated. One week later, the patient developed progressive dyspnea, oxygen desaturation (SO₂ 68%), perioral cyanosis, and use of accessory muscles. Pulmonary ultrasound showed pleural effusion, pleural thickening, and characteristic echographic signs of PE, such as the "medusa sign" and "column sign." Laboratory results indicated elevated inflammatory markers and high D-dimer levels, suggesting thromboembolic events. Bedside echocardiography proved to be a key diagnostic tool, accelerating diagnosis and enabling early intervention.

Keywords: pulmonary embolism; pulmonary hypertension; bedside echocardiography; early diagnosis; emergency treatment

Resumen

La tromboembolia pulmonar (TEP) y la hipertensión pulmonar (HIP) son condiciones graves que se presentan con frecuencia en urgencias. El diagnóstico temprano y el tratamiento oportuno son fundamentales para mejorar los resultados y la supervivencia del paciente. La disfunción ventricular derecha aguda, observada en los hallazgos ecocardiográficos, puede ayudar al diagnóstico de TEP y acelerar la obtención de imágenes definitivas en pacientes inestables. Se presenta el caso de una paciente femenina de 52 años con esclerosis sistémica y fibrosis pulmonar, tratada con micofenolato, esteroides y sildenafil por hipertensión pulmonar. Consultó por edema en el miembro pélvico derecho, y un estudio Doppler reveló trombosis femoral, iniciándose anticoagulación. Una semana después, la paciente presentó disnea progresiva, desaturación de oxígeno (SO₂ 68%), cianosis peribucal y uso de musculatura accesoria. La ecografía pulmonar mostró efusión pleural, engrosamiento pleural y signos ecográficos característicos de TEP, como el "signo de la medusa" y el "signo de la columna". Los resultados de laboratorio indicaron marcadores inflamatorios elevados y dímero D alto, sugiriendo tromboembolia. La ecocardiografía a pie de cama demostró ser una herramienta diagnóstica clave, acelerando el diagnóstico y permitiendo una intervención temprana.

Palabras clave: tromboembolia pulmonar; hipertensión pulmonar; ecocardiografía a pie de cama; diagnóstico temprano; tratamiento de urgencias

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INTRODUCTION

Pulmonary embolism (PE) and pulmonary hypertension (PH) are potentially fatal diseases that present in the emergency department. Early diagnosis and timely treatment improve patient outcomes and survival. Echocardiographic findings of acute right ventricular dysfunction may indicate the diagnosis of PE and accelerate the acquisition of definitive imaging in unstable patients.

CASE REPORT

Patient: Female, 52 years old, with systemic sclerosis, pulmonary fibrosis, under treatment with mycophenolate, steroids, and sildenafil for pulmonary arterial hypertension with 7 months of evolution.



Figure 1. Right pleural effusion



Figure 2. Right pleural effusion, "D sign" in short axis.



Figure 3. Dilation of right cavities, tricuspid insufficiency, and pulmonary artery dilation.



Figure 4. Apical view, 4 chambers, "McConnell's sign," paradoxical septal motion, and pericardial effusion are shown.

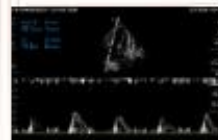


Figure 5 y 6. "60/60 sign"

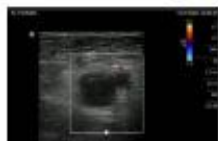
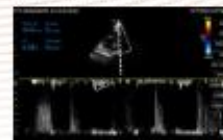


Figure 7. Right femoral venous thrombosis

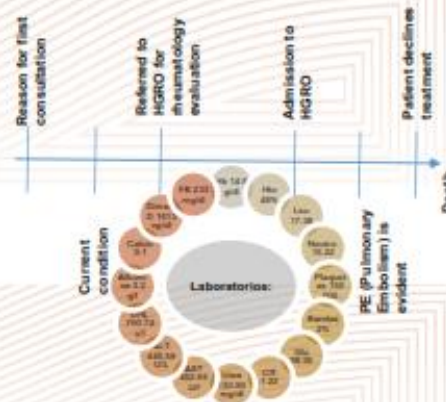


Figure 8. Left femoral venous thrombosis

Initial consultation reason: Right pelvic limb edema.

Doppler study: Femoral thrombosis, anticoagulation initiated.

Evolution: One week later, the patient presents with progressive dyspnea and desaturation, with SO_2 68%, perioral cyanosis, and the use of accessory muscles.



CONCLUSIONS

Bedside echocardiography represents a highly valuable diagnostic tool in clinical emergency practice. Performing point-of-care ultrasound (POCUS) shortened the time to diagnosis, respecting the patient's autonomy in deciding not to receive treatment. The clinical presentation and obtained images demonstrate that early intervention could have been implemented before performing any other imaging studies.

Pulmonary ultrasound:

- Pleural thickening and altered pleural sliding.
- Left pleural effusion.
- Characteristic ultrasound signs:
- Medusa sign and column sign → suggest parenchymal and pleural involvement associated with PE.

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