

## Ecografia *Point-of-Care* (POCUS): A Forma Mais Rápida de Diagnosticar e Tratar o Pneumotórax

### *Point of Care Ultrasound (POCUS): The Fastest Way of Diagnosing and Treating Pneumothorax*

Ana Cochicho Ramalho<sup>1</sup> , Carolina Midões<sup>2</sup> , João Costa<sup>3</sup> , José Mariz<sup>4</sup> 

**Palavras-chave:** Pneumotórax/diagnóstico por imagem; Pneumotórax/tratamento; Sistemas Automatizados de Assistência Junto ao Leito; Ultrassonografia.

**Keywords:** *Pneumothorax/diagnostic imaging; Pneumothorax/therapy; Point-of-Care Systems; Ultrasonography.*

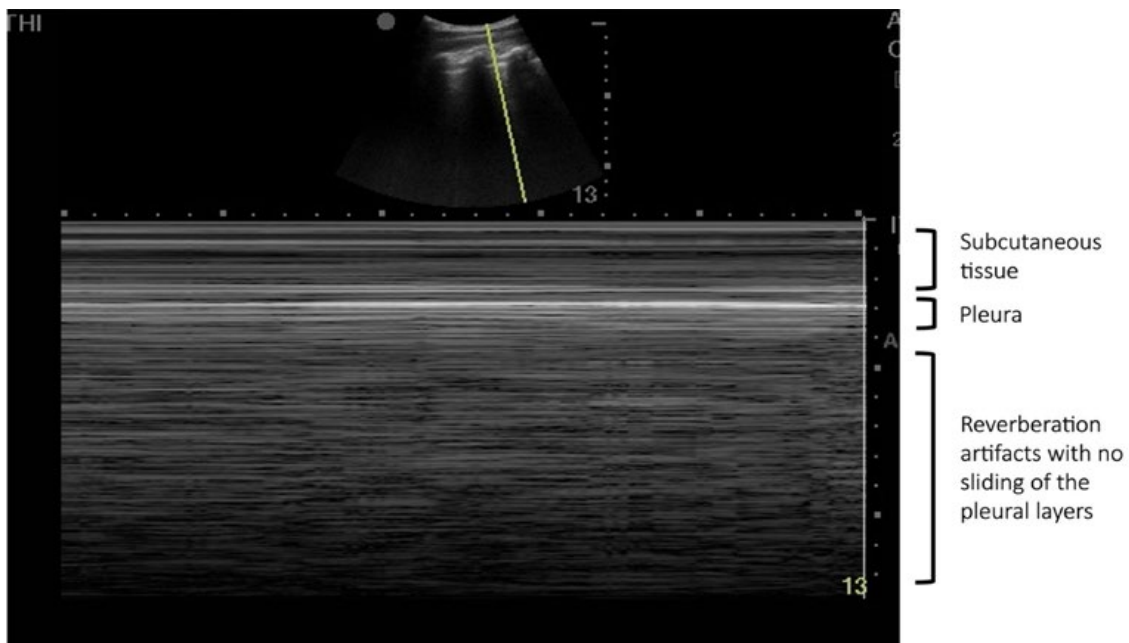
A 24-year-old man presented in the emergency room with oppressing chest pain on the entire left hemithorax and breathing difficulty, of sudden onset, which had started earlier that day.

He had had a previous episode of a spontaneous right pneumothorax, 5 years before, requiring drainage through

catheter thoracostomy and posterior video-assisted thoracostomy with pleurodesis. He had also been diagnosed with a personality disorder and medicated with paliperidone and regular use of tobacco and cannabinoids.

At observation he was tachypneic with peripheral oximetry of 93%. He was hemodynamically stable with a normal heart rate. Breath sounds were absent in all the left hemithorax and hyperresonance was noted with lung percussion. Arterial blood gas analysis showed hypoxemia (62 mmHg) and hypocapnia (30 mmHg).

Point-of-care-ultrasound (POCUS) evaluation was requested and ensued as the fifth pillar of physical examination. On ultrasound lung sliding was absent in the majority the left lung, and when in M-mode the barcode/stratosphere sign was



**Figure 1** - Ultrasound of the left thorax in M-mode showing the barcode/stratosphere sign.

<sup>1</sup>Serviço de Medicina Interna, Hospital Lusíadas, Lisboa, Portugal

<sup>2</sup>Serviço de Medicina Interna, Hospital de São José, Centro Hospitalar Universitário de Lisboa Central, Lisboa, Portugal

<sup>3</sup>Serviço de Medicina Interna, Hospital de Faro, Centro Hospitalar e Universitário do Algarve, Faro, Portugal

<sup>4</sup>Serviço de Medicina Interna, Hospital de Braga, Braga, Portugal



**Figure 2:** Chest radiogram showing: hyper transparent left lung; white visceral pleural line accompanying the heart's silhouette; right shift of the trachea and mediastinum and flattening of the left diaphragm.

evident in most of the fields examined (Fig. 1), findings compatible with the presence of a pneumothorax.

The chest radiogram was compatible with the ultrasound findings, showing a hyper transparent left lung and a white visceral pleural line accompanying the heart's silhouette. Contralateral shift of the trachea and mediastinum and flattening of the ipsilateral diaphragm were also present (Fig. 2).

An ultrasound guided pigtail catheter was placed on the fifth intercostal space near the midaxillary line. There were no complications, and the patient was discharged 3 days later.

POCUS is becoming a well-established modality for the detection of pneumothorax in the emergency setting.<sup>1-3</sup> This case illustrates the several advantages of said modality, such as the celerity and accessibility an exam that can be made at bedside without the need for transport (which is of utmost importance when considering critical patients), its high sensitivity, and the capability of guiding therapeutic procedures. Future prospective studies are needed to better define the standardization of lung ultrasound in pneumothorax, namely regarding the decision of drainage. ■

#### Declaração de Contribuição

ACR, CM, JC – Aquisição de imagem, redação do artigo

JM – Revisão de imagem e do caso

Todos os autores aprovaram a versão final a ser publicada.

#### Contributorship Statement

ACR, CM, JC - Image acquisition, article writing

JM - Image and case review

All authors approved the final draft.

#### Responsabilidades Éticas

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

Fontes de Financiamento: Não existiram fontes externas de financiamento para a realização deste artigo.

Confidencialidade dos Dados: Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.

Consentimento: Consentimento do doente para publicação obtido.

Proveniência e Revisão por Pares: Não comissionado; revisão externa por pares.

#### Ethical Disclosures

Conflicts of Interest: The authors have no conflicts of interest to declare.

Financing Support: This work has not received any contribution, grant or scholarship

Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.

Patient Consent: Consent for publication was obtained.

© Autor (es) (ou seu (s) empregador (es)) e SPMI Case Reports 2023. Reutilização permitida de acordo com CC BY. Nenhuma reutilização comercial.

© Author(s) (or their employer(s)) and SPMI Case Reports 2023. Re-use permitted under CC BY. No commercial re-use.

#### Correspondence / Correspondência:

Ana Cochicho Ramalho - ana.cochicho@gmail.com

Interno de formação específica em Medicina Interna, Hospital Lusíadas, Lisboa, Portugal

Rua Abílio Mendes 12, 1500-458, Lisboa

Recebido / Received: 2022/06/08

Aceite / Accepted: 2022/08/19

Publicado online / Published online: 2023/09/15

#### REFERENCES

1. Mariz J, Silva R, Romano M, Gaspar A, Gonçalves AP, Silva JP et al. Ecografia à cabeceira do doente na medicina interna: uma mudança de paradigma na avaliação do doente agudo. *Med Intern* 2018; 25: 309-19. doi: 10.24950/rspmi/reviisao/151/4/2018.
2. Varrias D, Palaodimos L, Balasubramanian P, Barrera CA, Nauka P, Melainis AA, et al. The Use of Point-of-Care Ultrasound (POCUS) in the Diagnosis of Deep Vein Thrombosis. *J Clin Med*. 2021;10:3903. doi: 10.3390/jcm10173903.
3. Soni NJ, Arntfield R, Kory P. *Point-of-Care Ultrasound*. 2nd ed. Philadelphia: Elsevier; 2011.