

## Pneumocephalus: Bubble Brain

## Pneumoencéfalo: Cérebro em Bolhas

Joana Reis Aguiar , Rafaela Ribeiro , Andreia Vilas Boas 

**Keywords:** Air Travel; Pneumocephalus/etiology; Pneumocephalus/imaging diagnosis.

**Palavras-chave:** Pneumoencéfalo/diagnóstico por imagem; Pneumoencéfalo/etiologia; Viagem Aérea.

A 65-year-old man presented to the emergency room with a 2-day history of severe and sudden headache that worsened with head movements, nasal congestion and postnasal drip. He had no history of head trauma. He had taken a transatlantic flight 4 days before symptom onset. His history was relevant for migraines and turbinectomy surgery 10 years before. Neurological examination was unremarkable. A computed tomography (CT) scan showed extensive pneumocephalus with gas bubbles scattered throughout the base cisterns, Sylvian fissures, suprasellar and supravermian cistern, and supratentorial cortical sulci (Fig. 1A) with a discontinuity of the right ethmoid cribriform plate, particularly of the ipsilateral lateral lamella (Fig. 1B). Pneumocephalus is a rare condition that occurs mostly after head trauma.<sup>1-3</sup> In this case, we believe the fissure was caused by bone fragility from the previous nasal surgery and pressure variations during the long-haul flight. This patient developed bacterial meningitis, one of the frequent complications, which delayed surgical correction. ■

### Contributorship Statement

JRA - Obtaining images, writing the manuscript and reviewing versions  
RR - Manuscript writing and version revision  
AVB - Writing the manuscript and critical revision of the content  
All authors approved the final version to be published.

### Declaração de Contribuição

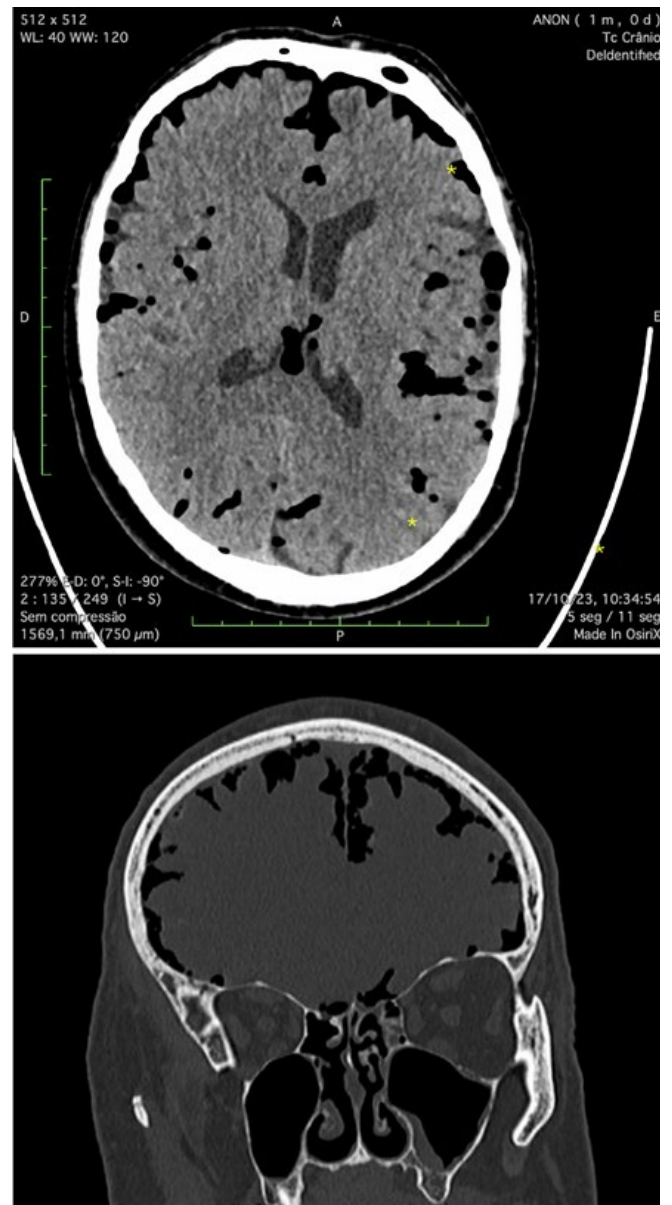
JRA – Obtenção de imagens, redação do manuscrito e revisão de versões  
RR – Redação do manuscrito e revisão de versões  
AVB – Redação do manuscrito e revisão crítica do conteúdo  
Todos os autores aprovaram a versão final a ser publicada.

### 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.

Department of Internal Medicine, Hospital da Luz – Arrábida, Vila Nova de Gaia, Portugal

<https://doi.org/10.24950/rspm.2615>



**Figure 1 A e B:** (A) Cerebral CT scan showing extensive pneumocephalus with multiple dispersed gas bubbles (asterisks). (B) Cerebral CT scan, bone window, showing a point of discontinuity of the right ethmoid cribriform plate (yellow arrow).

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.

Provenance and Peer Review: Not commissioned; externally peer reviewed.



**Video 1:**

[https://revista.spmi.pt/index.php/rpmi/\\$\\$\\$\\$call\\$\\$\\$api/file-api/download-file?submissionFileId=7382&submissionId=2615&stageld=1](https://revista.spmi.pt/index.php/rpmi/$$$$call$$$api/file-api/download-file?submissionFileId=7382&submissionId=2615&stageld=1)

**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.

© Author(s) (or their employer(s)) and SPMI Journal 2025. Re-use permitted under CC BY-NC 4.0 commercial re-use.

© Autor (es) (ou seu (s) empregador (es)) e Revista SPMI 2025. Reutilização permitida de acordo com CC BY-NC 4.0. Nenhuma reutilização comercial.

**Corresponding author /Autor correspondente:**

Joana Reis Aguiar - joanareisaguiar@gmail.com

Department of Internal medicine, Hospital da Luz – Arrábida, Vila Nova de Gaia, Portugal

Praceta Henrique Moreira, 150, 4400-346 Vila Nova de Gaia

Received / Recebido: 2024/08/07

Accepted / Aceite: 2024/09/19

Published / Publicado: 2025/03/31

**REFERENCES**

1. M Das J, Bajaj J. Pneumocephalus. [Updated 2024 Jan 30]. In: StatPearls [Internet]. Treasure Island: StatPearls Publishing; 2024. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK535412/>
2. Chen J, Wang SA, Huang CY, Wu YH, Hsieh CC. Spontaneous Pneumocephalus: A Case Report with a Literature Review. J Emerg Med. 2023;65:e517-e521. doi: 10.1016/j.jemermed.2023.06.013.
3. Cunqueiro A, Scheinfeld MH. Causes of pneumocephalus and when to be concerned about it. Emerg Radiol. 2018;25:331-40. doi: 10.1007/s10140-018-1595-x.