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Case Report

An unusual cause of acute headache: subarachnoid free air secondary to spontaneous bronchopleurodurosubarachnoid fistula from a Pancoast tumor

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ABSTRACT

Pneumocephalus and pneumorrhachis are related to transgression of the barriers to the central nervous system. We present a patient with a Pancoast tumor treated with palliative chemoradiation who developed symptomatic spinal and intracranial air caused by spontaneous bronchopleurodurosubarachnoid fistula secondary to direct tumor invasion into the thecal sac.

Introduction

Pneumocephalus and pneumorrhachis are usually associated with traumatic, neoplastic, or iatrogenic violations of the barriers to the central nervous system. A rare cause is bronchopleurodurosubarachnoid fistula, an unusual and difficult clinical problem with limited case reports, commonly related to trauma or posterolateral thoracotomies [1–10]. We present a case of symptomatic pneumocephalus and pneumorrhachis caused by spontaneous nonsurgical, nontraumatic bronchopleurodurosubarachnoid fistula from a Pancoast tumor invading the spine after palliative chemoradiation.

Case report

A 53-year-old man with a 35-pack-year smoking history initially presented with neck swelling, throbbing upper back pain, right upper extremity paresthesia, hemoptysis, and 25 pound weight loss over 3 months. Computed tomography (CT) of the chest and subsequent cervical spine magnetic resonance imaging revealed a large right superior sulcus tumor with adjacent vertebral invasion with pathologic fracture of T1 (Fig. 1). Transbronchial biopsy confirmed squamous cell carcinoma, staged as T4N3M1b (stage IV). Palliative chemoradiation was instituted a week later.

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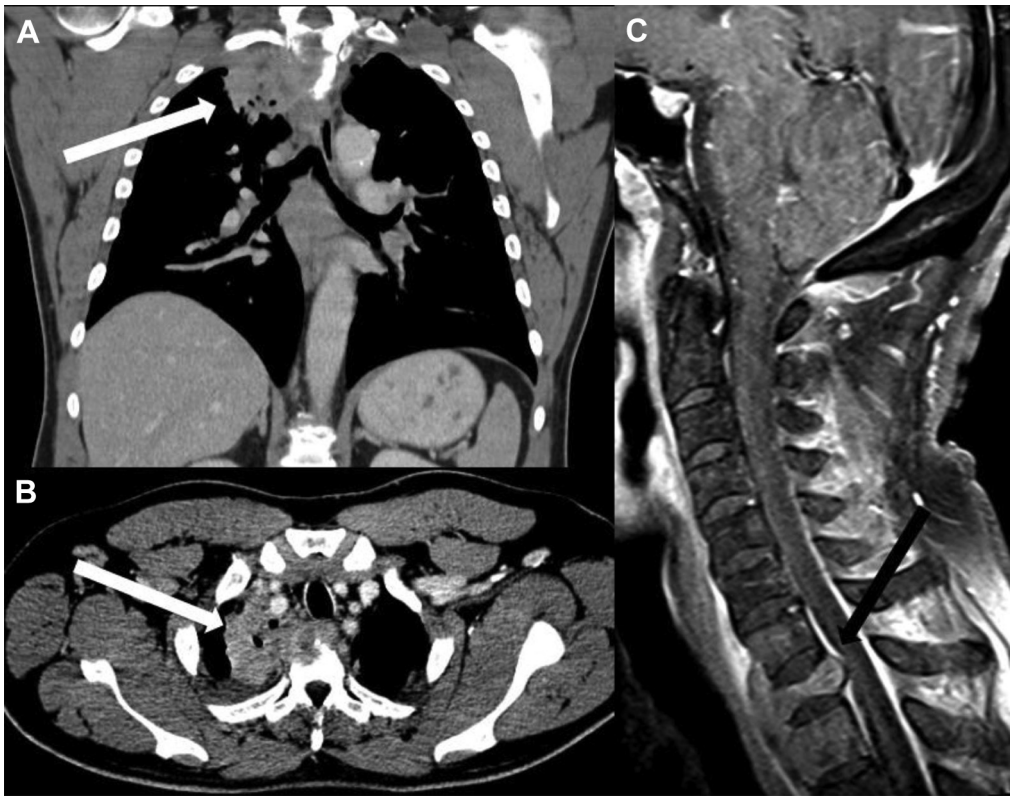

Fig. 1 – Coronal (A) and axial (B) contrast enhanced CT chest, and sagittal CE T1WI fat suppressed MRI cervical spine (C). Initial presentation: large Pancoast tumor with vertebral invasion (white arrows, A, B) and pathologic fracture of T1 (black arrow, C).

The patient received 3200 cGy and 2 cycles of carboplatin and/or paclitaxel before presenting to the emergency department a month later with acute upper back pain and severe positional headache following a bout of coughing. Head CT demonstrated extensive pneumocephalus (Fig. 2). Chest and cervical spine imaging demonstrated enlarged

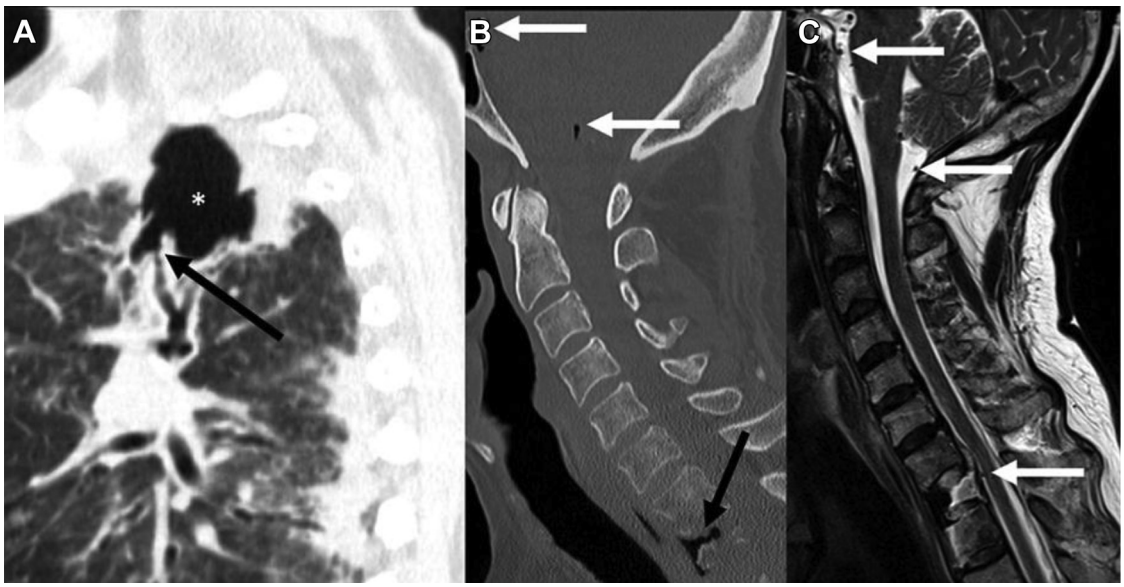

Fig. 2 – Sagittal noncontrast CT chest (A) and cervical spine (B), and sagittal T2WI cervical spine (C). Presentation to emergency department with severe headache after coughing: fistula (black arrows) connecting bronchus, necrotic air-filled tumor (*), and collapsed T1 vertebra (B). Spinal and intracranial free air (white arrows, B, C).