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CONSTRICTIVE BRONCHIOLITIS IN A PATIENT WITH NEUROTUBERCULOSIS

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Abstract: Constrictive bronchiolitis is a condition characterized by inflammation and fibrosis of the bronchial walls, resulting in a reduction in the bronchiolar lumen. It can be caused by several disorders that affect the bronchial mucosa, and must be suspected especially in patients with a history of previous aggression to the lower respiratory tract. In this article, we present the case of a patient admitted to the emergency department with a neurological condition compatible with meningeal tuberculosis, presenting associated pulmonary symptoms, with no history of previous pathologies related to respiratory tract involvement, being diagnosed with constrictive bronchiolitis through a lung tissue study. This case reinforces the importance of knowing and suspecting this condition in patients with lung function tests and suggestive imaging patterns, but without associated personal risk factors.

INTRODUCTION

Constrictive bronchiolitis, also known as bronchiolitis obliterans or cicatricial bronchiolitis, is a rare fibrotic condition, with involvement of terminal and respiratory bronchioles (1, 2). This condition represents a pattern of injury to small airways, and can be caused by different etiologies such as post lung, heart or bone marrow transplant, as well as connective tissue diseases, post inhalation injury or lower respiratory tract infection. (5) The most common symptoms are cough and dyspnea. The main imaging findings in chest computed tomography exams are the mosaic attenuation pattern and the presence of bronchiectasis and/or bronchial parietal thickening, inferring a bronchiolocentric pattern of involvement (1). The presence of centrilobular nodules is a finding less commonly described in the literature. In this article, we present the case of a patient admitted to the emergency department of a public hospital with a neurological condition compatible with meningeal tuberculosis, presenting associated pulmonary symptoms, diagnosed with constrictive bronchiolitis.

REPORT OF CASE

Male patient, 24 years old, admitted to the neurological emergency service of the General Hospital of Fortaleza-Ceará, with a recent clinical picture of unmeasured fever, associated with psychomotor agitation, cognitive changes and temporospatial disorientation, lasting approximately 7 days. On physical examination, he was clinically and hemodynamically stable, but drowsy, with isochoric and unreactive pupils, convergent strabismus and signs of meningeal irritation. Endotracheal intubation was indicated to protect the airways. The patient did not make chronic use of medications or illicit drugs. He had a previous history of recent hospital admission due to adynamia, unintentional weight loss and cough, and was treated at the time with a regimen consisting of rifampicin, isoniazid, pyrazinamide and ethambutol (RIPE) due to suspected pulmonary tuberculosis. Given the condition, computed tomography (CT) scans of the skull and chest were performed.

Contrast-enhanced head CT revealed signs suggestive of diffuse cerebral edema and intracranial hypertension, without notable focal lesions (Figure 1). Furthermore, the patient presented elevated protein and traces of mycobacterium tuberculosis in the Genexpert examination of the cerebrospinal fluid.

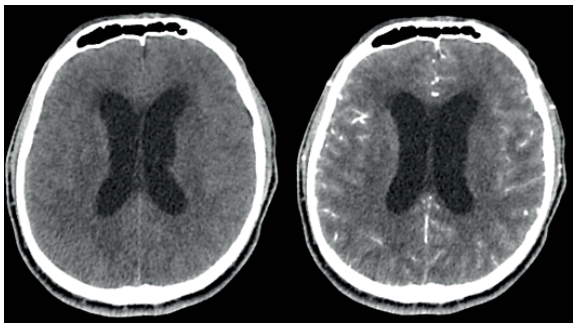

Figure 1: Contrast-enhanced head CT shows diffuse effacement of brain sulci and cisterns, as well as dilation of the supratentorial ventricular system, with signs of CSF transudation.

Chest computed tomography revealed direct findings suggestive of bronchiolitis (Figure 2).

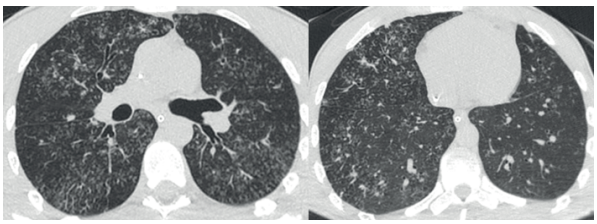

Figure 2: Non-contrast chest CT in the lung window shows multiple centrilobular opacities, some with a "tree-in-bud" pattern, diffusely distributed throughout the lung parenchyma.

Given the clinical and imaging findings, treatment for meningeal and pulmonary tuberculosis was initiated with a RIPE regimen and corticosteroids. After approximately one month of treatment, there was no significant improvement and the patient remained on mechanical ventilation with worsening airway resistance, undergoing lung biopsy with non-anatomical segmentectomy, which showed prominent lesions of small airways, ranging from peribronchiolar fibrosis. mild to complete obliteration of the lumen by fibrous polyp tissue, accompanied by an increase in the pericicatricial air space, findings compatible with the histological diagnosis of constrictive bronchiolitis (Figure 3).

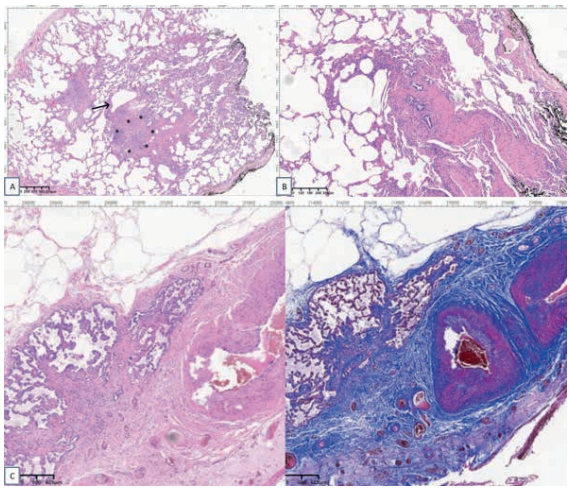

Figure 3: A. Low magnification photomicrograph shows lung parenchyma with a centralized bronchovascular axis. The arrow shows the pulmonary arteriole, while the area marked with asterisks represents the region of the terminal bronchiole, which is completely replaced by fibrocollagenized tissue, with foci of bronchiolar metaplasia on the periphery. Scanned slide, stained with HE. B. Medium resolution photomicrograph shows bronchiolar fibrosis, peribronchiolar metaplasia and associated mild inflammation. C. Focus of marked bronchiole fibrosis, with total obliteration of its lumen, and formation of spaces with bronchiolar metaplasia, shown on HE and Masson's Trichrome.

DISCUSSION

Constrictive bronchiolitis is a fibrotic lesion of the small airways that develops externally to the lumen, compressing the airways in a concentric manner, with eventual obliteration (6). It is most commonly found in the context of organ transplantation, mainly lung and heart-lung transplantation, where it is the main manifestation of chronic rejection. It may also be related to infections, connective tissue diseases, drug-induced lung disease, among others (7). The most common imaging findings are the mosaic attenuation pattern, air trapping and bronchial dilation,

indirect findings of small airway disease (3). Direct tomographic signs of bronchiolitis, such as thickening of the bronchial walls and centrilobular nodules, are less common and may be absent (4).

CONCLUSION

Constrictive bronchiolitis is a clinical entity that must be suspected in patients with known risk factors, especially those with a history of previous aggression to the lower respiratory tract, post-transplantation, joint tissue diseases and past use of pneumotoxic medications. In the reported case, the patient presented a neurological condition compatible with neurotuberculosis, as well as pulmonary symptoms and imaging findings suggestive of pulmonary tuberculosis, but no granulomas were found in the histopathological study, although the presence of this infection as a risk factor for the onset of constrictive bronchiolitis, given the time interval between the start of treatment and the lung biopsy. In cases without known risk factors, with pulmonary function tests with a non-reversible obstructive pattern, ventilatory difficulties and imaging tests with a bronchiolocentric disease pattern, lung tissue studies are sometimes justified, as in the case presented.

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