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Coughing up Casts – an Adult Case of Plastic Bronchitis

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Title

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Introduction

Plastic bronchitis is characterized by the formation of bronchial casts that form in airways with the potential to cause obstruction. It is most commonly seen in pediatric patients with cyanotic heart disease. It is rare in adults, especially those without chronic lung or rheumatologic disease.

Case Presentation

A 41-year-old female patient presented to the ED after waking up gasping for air. With effort, she coughed up phlegm that was apparently the size of her hand and shaped like a “Christmas tree”. The phlegm contained blood. She had associated cough for the prior two weeks with pleuritic chest pain. She had a past medical history of HTN controlled with lisinopril-HCTZ and chronic leukocytosis and thrombocytosis for which she was previously evaluated by oncology with flow cytometry and bone marrow biopsy – both of which were unremarkable. She denied smoking history. She reported an aunt who had similar issues coughing up large-volume phlegm shaped similarly.

On admission, she was afebrile (98.9F) oral and tachycardic (108). Physical exam revealed increased right-sided tactile fremitus on palpation and crackles on auscultation. CBC showed leukocytosis, albeit at her previous baseline. Rheumatologic workup was negative. CXR showed patchy infiltrate in the right lung. CT showed ground glass and airspace consolidations scattered throughout the right lung. Bronchoscopy was performed and plugs of purulent secretions were aspirated from bronchi in the right middle and lower lobes. After the procedure, her respiratory symptoms improved and she was started on broad-spectrum antibiotics. Gram stain and bronchial cultures (fungal and bacterial) came back negative. Histology of sputum showed abundant lymphocytes in a background of fibrin with no AFB, granuloma, epithelial component, or malignancy. Her symptoms continued to improve and she was discharged with oral antibiotics and instructions to follow-up in pulmonary clinic in two weeks.

Discussion

Lower airway obstruction by bronchial casts can cause acute, severe symptoms. In adults, plastic bronchitis is rare.

The Seear criteria (1) groups bronchial casts into two types. Type 1 (inflammatory) casts are fibrinous and have cellular infiltrate (eosinophils) with evidence of inflammation on histology. Treatment involves systemic corticosteroids, N-acetylcysteine, and antibiotics. Type 2 (acellular) are mucinous and have significantly less cellular infiltrate and little evidence of inflammation on histology. Type 2 casts are

mainly seen in pediatric patients following repair of cyanotic heart disease or with lymphatic drainage abnormalities, and treatment revolves around correcting the patient's primary problem.

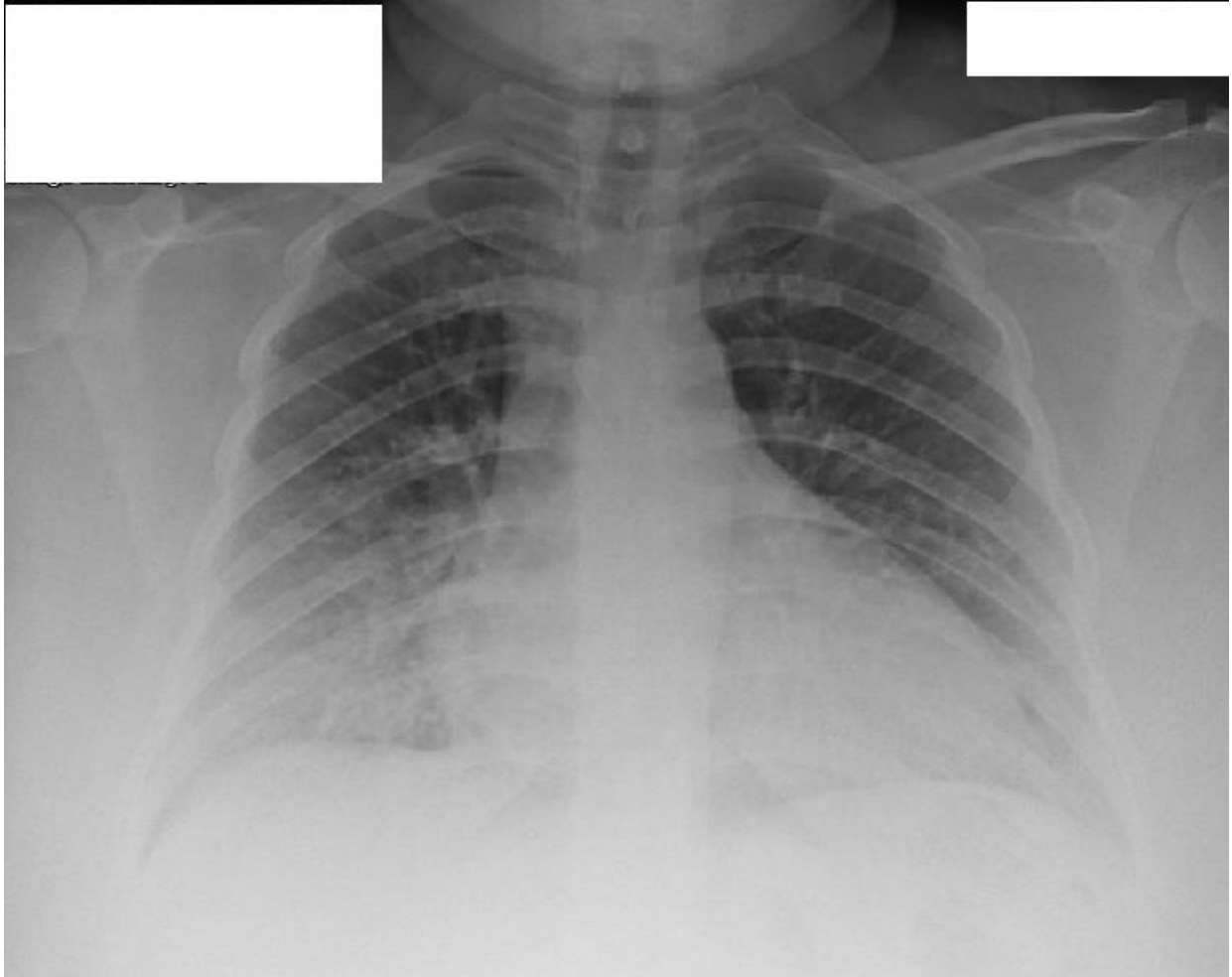
The bronchial casts identified in our patient were mostly Type 1 casts. It is unclear what led to their formation although a relative with similar symptoms points towards an etiology related to family history.

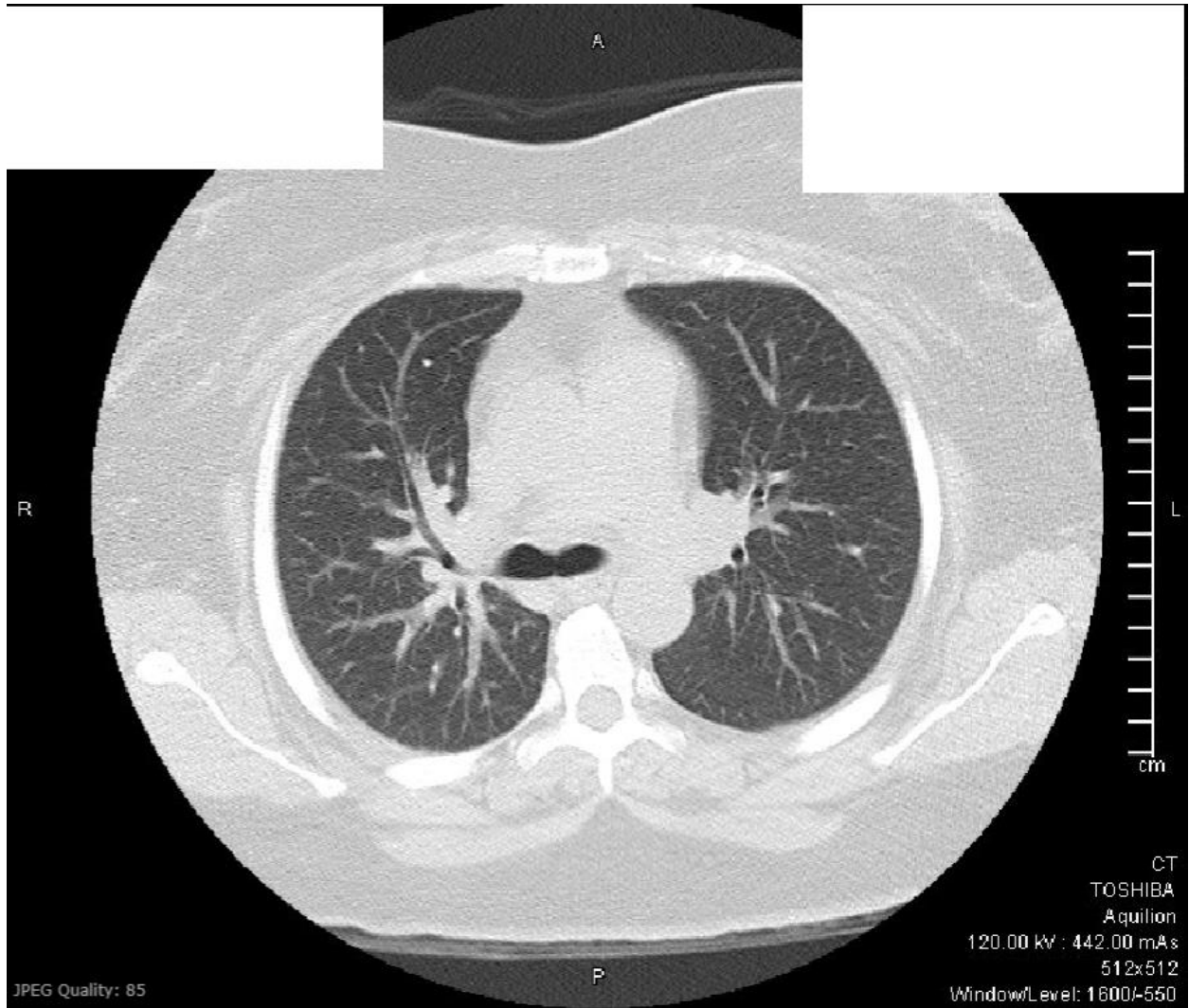
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Images







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