Radiology Pearl

Idiopathic Asymptomatic Broncholithiasis in an Anemic Female

***Hameed Aboobackar Shahul, **Mohan K Manu, ***Aswini Kumar Mohapatra**
* Junior Resident, ** Associate Professor, ***Professor,
Department of Pulmonary Medicine, Kasturba Medical College Manipal, Manipal University, Manipal.

Correspondence :
Mohan K. Manu
Associate Professor,
Department of Pulmonary Medicine,
Kasturba Medical College Manipal,
Manipal University,
Manipal, Udupi Dist., Karnataka. PIN 576104

Phone number- 919964896253, 918202922294 (O)
Email- manumohan73@gmail.com

Running title : Asymptomatic broncholithiasis.

Key words : Broncholithiasis, lung, idiopathic.

CLINICAL PRESENTATION :

A 50 year old post-menopausal female, presented with generalized fatiguability of one month duration, associated with heart burns. Past medical and surgical history was unremarkable. General examination showed marked pallor with normal vital signs. Respiratory system examination revealed bilateral vesicular breath sounds with coarse crepitations and occasional rhonchi. Hemogram showed severe anemia (Hb = 7.3 g/dl). Evaluation for anemia was consistent with chronic blood loss anemia secondary to gastric ulcer. Chest radiograph (Figure 1) showed bilateral coarse calcifications, predominantly over the right upper zone with bilateral calcified lymph nodes at the hila. A repeat chest radiograph (Figure 2) showed change in the position of the calcifications.

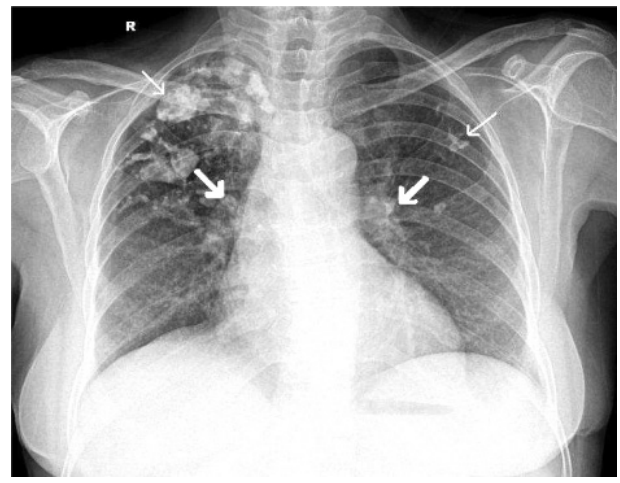

Fig. 1 : Chest radiograph (postero-anterior view) showing coarse calcifications bilaterally (thin white arrows), predominantly over the right upper zone with bilateral calcified lymph nodes at the hila (thick white arrows).

Ziehl Neelsen staining of sputum for acid fast bacilli was negative and sputum culture grew normal oropharyngeal flora. Computed tomography of Thorax (Figure 3) revealed tubular and branching calcified nodules within the bronchioles, in the upper lobe of both lungs.

Figure 2: Chest radiograph (postero-anterior view) taken at follow up after 6 months showing change in the relative position of broncholiths on the right side.

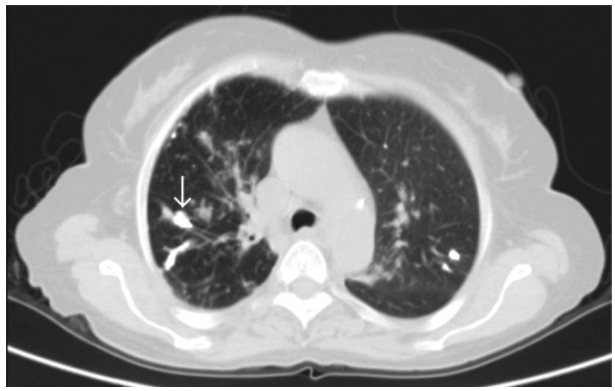

Figure 3: Axial section of CT Thorax showing tubular and branching calcified nodules (white arrow) within the bronchioles, in the upper lobe of both lungs.

Diagnosis :

Though asymptomatic presentation is rare and an obvious aetiology could not be ascertained, the roentgenogram findings and CT features were consistent with a diagnosis of Broncholithiasis.

Discussion :

Broncholithiasis is a rare condition, characterised by the presence of calcified or ossified material within the bronchial lumen. It was first reported by Schenck in 1600. The commonest cause of broncholithiasis is erosion and extrusion of a calcified adjacent lymph node into the bronchial lumen, usually associated with tuberculosis or histoplasmosis[1,2]. Other causes include aspiration of bone tissue or in situ calcification of aspirated foreign material, extrusion of calcified or ossified bronchial cartilage plates, migration of calcified pleural plaque or renal stones to a bronchus[1]. Preferential sites are proximal right middle lobe bronchus and anterior segmental bronchus of the upper lobes[3]. Broncholiths are usually grey-white, irregularly shaped and variable in size with spur-like projections or sharp edges that can cause distortion, irritation, and erosion of bronchus. Repeated physical impingement of calcified peribronchial lymph nodes on the bronchial wall during respiratory motion is responsible for broncholith formation[1].

Pulmonary symptoms and signs are non specific. Clinical presentations include chronic cough (100%), fever (50%-60%), hemoptysis (45-50%), localized wheezing (25-60%), chest pain (20%) and expectoration of stones (15-26%)[4]. Rarely, patients may be asymptomatic. Chest radiograph may reveal the presence of calcified nodules. The disappearance of a previously identified calcified nidus or change in position of a calcified nidus on serial radiographs reinforces the diagnosis[5]. CT Thorax, due to its high resolution and ability to characterise calcifications, can be strongly suggestive of broncholithiasis when there is a calcified nodule that is either endobronchial or peribronchial and is associated with findings of bronchial obstruction, such as atelectasis, obstructive pneumonitis, or bronchiectasis[5]. Primary endobronchial infections like mycetoma, calcified endobronchial tumours, tracheobronchial diseases with mural calcification, and hypertrophied bronchial artery with intraluminal protrusion can mimic broncholithiasis radiologically, but can be differentiated by typical CT features[5]. Fibre optic bronchoscopy is insensitive with regard to diagnosis.

Treatment options include simple observation, bronchoscopic removal or surgery. Review of literature suggests bronchoscopic removal should be considered in cases of uncomplicated and loose broncholithiasis, whereas surgical management should be chosen in complicated cases[6].

Though a rare condition with a wide range of presentations, awareness of the various causes of broncholithiasis and the conditions it mimics, as well as awareness of the typical radiologic features is helpful in

obtaining an accurate diagnosis and providing adequate patient management.

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