

Atelectasis of Lung as a First Sign of Lung Cancer: A Case Report

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Abstract

Atelectasis is a common finding in chest x rays in inpatient settings. While atelectasis that clears with regular respiratory toileting may signify a benign etiology, it could be the first sign of airway malignancy. Lung cancer is common and smoking is the main risk factor for primary lung cancer. Here we present the story of a 77 years old female in whom atelectasis was the first sign of lung cancer. In patients with appropriate risk factors, atelectasis should be pursued further to rule out underlying lung cancer.

Keywords Lung cancer; Atelectasis; Bronchoscopy; ICU; Mucus plug; Whiteout of lung; Smoking

Case Presentation

A seventy seven years old female was brought in to the hospital with abdominal pain, fever, chills and cloudy urine. She had associated nausea. She also provided history that she has had a cough, productive of mild sputum and occasional blood tinge sputum for about one and half months. She had some shortness of breath during this presentation. She had no history of chest pain, sinus congestion, aspiration, wheezing, new onset back pain or headache. Review of systems revealed that she had poor baseline functional status and walked with a walker with WHO functional status class 3. Review of system was also positive for chronic back, hip and hand joint pain attributed to rheumatoid arthritis. She had home health to help her with her daily medical care. Past medical history revealed history of recurrent urinary tract infection. This had started after she had a pubovaginal sling. She had many redo surgeries. She had a suprapubic catheter placed about three months prior and was on chronic suppressive antibiotic therapy. She had chronic hydronephrosis. In addition, she had rheumatoid arthritis for about 30 yrs. She had hypertension, hyperlipidemia and gastroesophageal reflux disease. She had smoked about one to two pack of cigarettes a day for about thirty years and had quit 30 years ago. She worked as a billing clerk and denied exposure to any dust fumes or chemicals. She was on methotrexate, folic acid, cefdinir, omeprazole and metoprolol. Her labs showed normal white blood cell count. Urine was positive for elevated pH, nitrite, leukocyte esterase and more than hundred white cells per high power field. Her chest x ray showed left lower lobe haziness which was suggestive of atelectasis (Figure 1). Her urinary symptoms and abdominal pain improved after antibiotics and supportive care. She had aggressive chest physiotherapy, mucolytics and bronchodilator therapy and the atelectasis improved. The chronic cough was thought to be due to underlying chronic obstructive pulmonary disease. She was discharged in stable condition. She had a follow up chest x ray as an outpatient after a week. This showed a white out of the left lung and she was readmitted for further management (Figure 2).

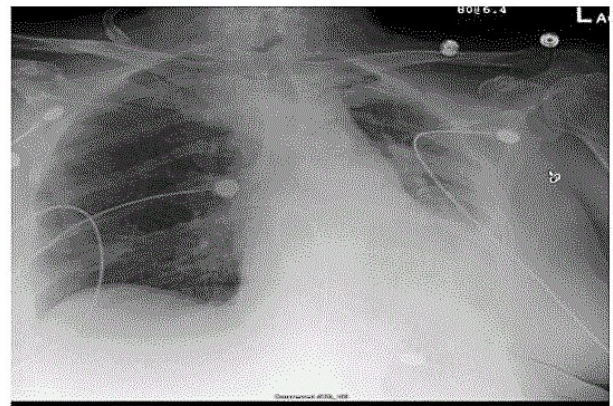


Figure 1: Left lower lobe atelectasis.

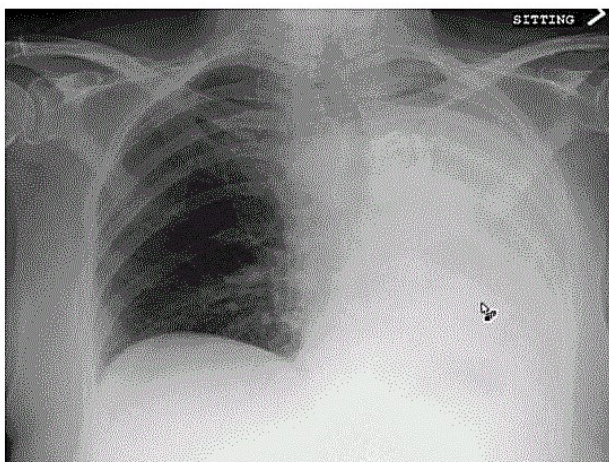


Figure 2: Left lung atelectasis.

It showed occlusion of the left main stem bronchus and complete atelectasis of left upper lobe and lingula and near complete atelectasis of left lower lobe with some aeration (Figure 3). She had normal white count. She underwent flexible bronchoscopy, which showed a tenacious mucus plug in the left main stem bronchus (Figure 4). The mucus plug required more than thirty minutes of manipulation with the help of bicarbonate solution and acetylcysteine. Forceps and basket were used to clear the airway.



Figure 3: Left main stem bronchus occlusion.



Figure 4: Blocked left mainstem bronchus.

When the mucus plug started to clear, there was an underlying friable, gelatinous, glistening tumor in the main stem bronchus (Figure 5). This was biopsied with forceps. Histopathology revealed squamous cell carcinoma. At the time of this report, patient had a positron emission tomography, which showed high FDG (fluorodeoxyglucose) uptake left hilar area corresponding to the tumor site. She was not a surgical candidate despite resectable tumor of stage 2B, due to her poor health and is scheduled to receive chemotherapy and radiation therapy.

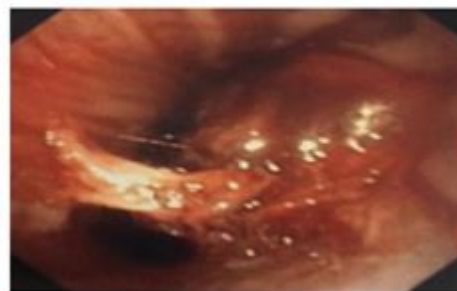


Figure 5: Endobronchial tumor.

Discussion

Atelectasis is described as loss of lung volume due to collapse of lung tissue. Atelectasis could be caused by many different reasons including recumbent positioning, mucus plugs, foreign body in the airway, aspiration, tumor etc. Obstructive atelectasis describes collapse of lung tissue due to blockage of an airway [1]. In patients with pain issues (abdominal or chest) in the intensive care unit, decreased compliance of lung tissue, impaired regional ventilation and retained secretions can cause atelectasis through interference with spontaneous deep breathing and coughing [2,3]. Resolution of atelectasis with improvement in pain and with general respiratory toilet confers above mechanism as the etiology of atelectasis. However, atelectasis is also present in about 30%-35% of patients with undiagnosed lung cancer and could pose as a benign etiology, especially in an intensive care unit setting where atelectasis is mostly caused by mucus plug and secretions [4-6]. Independently, atelectasis could be the first sign of lung cancer and could be the presenting complaint [7,8]. Flexible bronchoscopy is a very frequent procedure performed to relieve atelectasis [6]. However, although there is paucity of literature in this area, bronchoscopy and aggressive chest physiotherapy could be considered equivalent in terms

of therapeutic gain in relieving atelectasis [9]. Lung cancer is common and occurs in about 225,000 patients and causes over 160,000 deaths annually [10]. Smoking is the primary risk factors for lung cancer which is estimated to account for approximately 90% of all lung cancers [11]. This patient had the typical risk factors and continued perusal of the atelectasis was appropriate which finally led to the diagnosis of lung cancer.

Conclusion

Due to high occurrence of lung cancer in patients with smoking, atelectasis in these patients should be pursued aggressively as atelectasis could be the first presenting sign even in an inpatient setting where atelectasis is common and could suggest a benign etiology like a mucus plug.

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