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Case report

Shortness of breath: Patient history not always indicative of the cause

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ABSTRACT

This is a 78 year old male with a past medical history of coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), hypertension (HTN), and gastroesophageal reflux disorder (GERD) who presented to the emergency room with worsening shortness of breath (SOB) and low-grade fevers for one week prior to admission. He was originally diagnosed with healthcare associated pneumonia (HCAP) and an acute on chronic COPD exacerbation and treated with prednisone, inhalers, ipratropium/albuterol, and broad-spectrum antibiotics. His symptoms were slow to respond to therapy and he continued to have end-expiratory wheezes with persistent SOB. A CT of his chest was ordered to rule out a possible pulmonary embolus (PE) and instead showed an obstructing mass in the bronchus. Pulmonology was consulted and performed a bronchoscopy, which revealed a foreign body (bean) causing the obstruction, which was removed, and the patient's symptoms improved shortly thereafter.

1. Background

This case helps to demonstrate the importance of always looking at other possible causes of his/her symptoms when they do not improve with the standard evidence based medical management. This was an example of a fairly healthy elderly gentleman who had what appeared to be a textbook case of acute on chronic COPD exacerbation with HCAP. He had a mild leukocytosis on admission and was requiring increased oxygen requirements above his baseline. His chest X-ray (CXR) report read both lung fields to be clear without any evidence of infiltrates as well as normal cardiac silhouette and size and his blood cultures had no growth of any organisms. He was treated appropriately with prednisone, inhalers, duonebs, and broad-spectrum antibiotics. However, his symptoms were slow to respond to therapy and that is when we needed to start looking at other potential causes. Even with a Wells score of 1.5 making the probability of pulmonary embolus (PE) very low on the differential, it was decided to order a CTA of the chest. This of course is not the first-line diagnostic step in a patient having such a low probability of a PE, however it was a good example of a time when clinical judgement might override previous statistical analysis. This case is unique in the sense that a diagnostic test was ordered looking for something that most likely we would not find, but found something we did not expect which ultimately was the exact cause of the patient's symptoms. This proves as a strong lesson that even though we may see similar presentations of common problems over and over again, there can always be atypical cases that mimic the most common diagnoses.

2. Case presentation

This is a 78 year old male with a past medical history of coronary artery disease (CAD), chronic obstructive pulmonary disease (COPD), hypertension (HTN), and gastroesophageal reflux disorder (GERD) who presented to the emergency room with worsening shortness of breath (SOB) and low-grade fevers for one week prior to admission. He had not had any sick exposures, recent history of long travel, prolonged immobility or changes in any of his home medications. He denied any associated chest pain, cough, or changes in his stool or urine. He felt subjective fevers on and off with chills, headaches and body aches. He was in no acute respiratory distress on admission. Of note he was recently admitted to the hospital two months prior with a similar presentation and discharged after one-day home with levofloxacin and prednisone. He has a 30 pack-year history but quit 7 years ago, denied alcohol use and denied recreational drug use. His family history was remarkable for CAD in his father and mother.

3. Investigations

On admission, his lactic acid (LA) was elevated at 3.9 mg/dL, his arterial blood gas (ABG) showed a pH of 7.30, arterial oxygen partial

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pressure (P_aO_2) was 61 mmHg, arterial carbon dioxide partial pressure (P_aCO_2) was 50 mmHg, bicarbonate (HCO_3^-) was 25 mEq/L and he had a leukocytosis of 12 $\times$ 10^9/L with an Absolute Neutrophil Count of 12,000/mm3. His LA was followed and down trended. His LA reached 1.1 mg/dL, his ABG showed pH 7.33, P_aO_2 of 57.2 mmHg, P_aCO_2 of 41.7 mmHg and HCO_3^- of 27 mEq/L prior to pursuing further workup with CTA and bronchoscopy. His urine culture showed no growth and his blood cultures along with respiratory sputum culture/panel resulted in no growth or organisms. His chest X-ray report read both lung fields to be clear without any evidence of infiltrates as well as normal cardiac silhouette and size. CTA of chest showed an aspirated foreign body in the distal bronchus intermedius, the specific location within the bronchus was unable to be determined and not documented in report (Fig. 1). The bronchoscopy determined the foreign body to be a bean. After removal of the bean his LA was 0.4 mg/dL, ABG showed pH 7.4, P_aO_2 of 90 mmHg, P_aCO_2 of 45 mmHg and HCO_3^- of 25 mEq/L.

4. Differential diagnosis

Foreign Body Aspiration
Acute on Chronic COPD Exacerbation
Healthcare Associated Pneumonia
Aspiration Pneumonia

5. Treatment

In the emergency room he was given a dose of levofloxacin, ipratropium/albuterol, and methylprednisone with minimal improvement. He was started on empiric broad-spectrum therapy, which included Vancomycin, Cefepime, and Azithromycin. He was also placed on scheduled duonebs, prednisone, symbicort, tiotropium and incentive spirometry. This all just resulted in mild improvement. He was transitioned to Clindamycin and the broad-spectrum therapy was discontinued. Bronchoscopy was done which resulted in removal of the foreign body, which was found to be a bean.

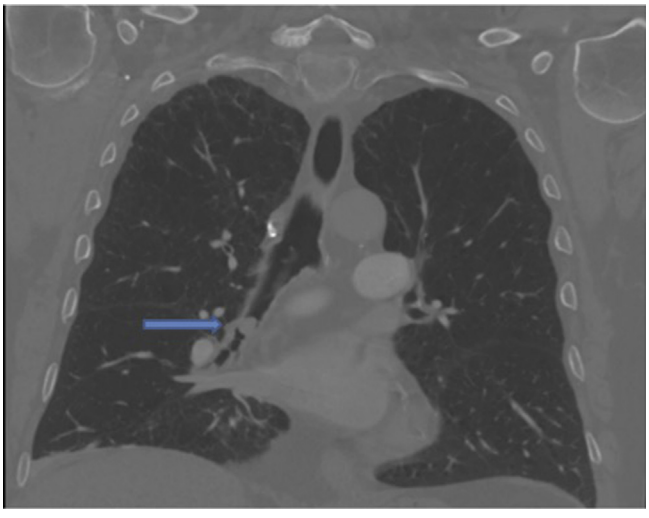

Fig. 1. Anterior/Posterior CT Chest of patient three days into admission. Blue arrow indicates area of foreign body obstruction. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

6. Outcome and follow-up

After removal of the foreign body (bean), the patient had immediate improvement in his shortness of breath. He was in the hospital for a total of 5 days and was back to his baseline functional status on the day of discharge. He was sent home to complete his course of Clindamycin and continue his home medications without any significant changes.

7. Discussion

This case demonstrated a foreign body aspiration that mimicked a COPD exacerbation and pneumonia. Throughout the world, foreign body aspiration continues to remain a common problem and it's incidence has not decreased through time [1]. The most likely cause of foreign body aspiration in adults is due to failure of the protective mechanisms of the airway [2]. This occurs most commonly in the sixth and seventh decade of life [3]. Some of the most common symptoms include cough, fever, hemoptysis, and dyspnea [1]. The patient is this case only had two of these common symptoms, but was in the likely age range for foreign body aspiration. What made this patient slightly more difficult than other cases that have been reported is that he had other significant comorbidities that are hard to differentiate from the actual causes of his symptoms. He has a history of COPD and previous episodes of pneumonia, both of which could contribute to his symptoms [3].

Furthermore, the diagnostic utility of the CTA chest in this patient would have been presumed to be very low since he had a low probability of having a PE. However, without this diagnostic modality, the correct cause of his symptoms would not have been identified and we would not have been able to proceed forward with a bronchoscopy. After review of the current literature the best management is the use of the flexible bronchoscope, which is ultimately what led to the improvement in the condition of this patient [3].

8. Learning points/take home messages

- When a patient is not improving on the initial recommended therapy for the condition, it is wise to look for other causes
- It is important to remember that sometimes there can be multiple problems that can paint a similar clinical picture
- Even when a patient does not provide history that can lead you to the correct diagnosis, be prepared to order other tests to exclude different causes.

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