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Spot the Diagnosis

Bronchial Asthma Exacerbation due to Unusual Complication

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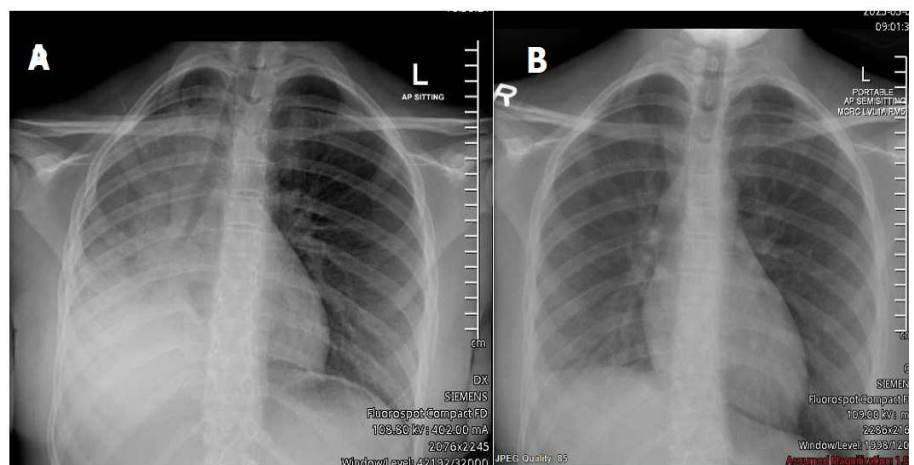
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A 15-year-old girl with asthma presented to the emergency department with a sudden worsening of her shortness of breath overnight. For the past two days, she had been suffering from mild dyspnea, a low-grade fever, a productive cough with sputum, and mild pleuritic chest pain. Upon examination, her vital signs were recorded as follows: temperature: 38.2°C, blood pressure: 112/68 mm Hg, pulse rate: 131 beats per minute, respiratory rate: 25 breaths per minute, and oxygen saturation: 84% while breathing room air. Chest auscultation indicated diminished breath sounds in the right lower lung zone accompanied by wheezing.

Laboratory tests were unremarkable, and a respiratory viral panel was negative. A chest X-ray was performed (Image A). The patient received treatment with nebulized salbutamol, ipratropium, hypertonic saline, and intravenous hydrocortisone in the emergency department. By the following morning, her symptoms had improved, and she maintained oxygen saturation on room air. A repeat chest X-ray 12 hours later is shown below (Image B).



Based on the clinical presentation and the given images, what is the most likely provisional diagnosis?

- A) Bacterial pneumonia.
- B) Pneumothorax.
- C) Mucus plugging with right lung collapse.
- D) Acute pulmonary embolism.
- E) Status asthmaticus with secondary infection.

The correct answer is C.

Mucus plug dislodgement with subsequent lung collapse is the most likely cause for the clinical presentation of this patient. Mucus plugging has been identified as an important feature of severe asthma contributing to airway obstruction and disease severity. [1] A mucus plug in the lungs can lead to lung collapse (atelectasis), by blocking airways and preventing air from reaching the alveoli (Image 1).

Pneumonia remains a potential diagnosis due to her febrile state and suggestive symptoms; however, the rapid alleviation of symptoms following bronchodilator treatment and the normalization of the repeat X-ray render this diagnosis unlikely. Pneumothorax is a recognized complication among asthmatics, with the incidence of requiring mechanical ventilation for severe asthma ranging from 3% to 6%. [3]

The risk of pneumothorax is heightened by hyperinflation. While it is a conceivable diagnosis, the swift response to treatment and the X-ray results make it less likely. Status asthmaticus could also be considered; however, the rapid improvement in the X-ray findings does not align with this condition. It is essential to rule out pulmonary embolism and infarction as significant possibilities; nevertheless, the clinical

scenario and the observed improvement do not support this diagnosis.

PATIENT CONSENT

A written informed consent was obtained from the patient for publication of this report.

AUTHORS' CONTRIBUTION

All authors contributed to the completion of this work. The final manuscript was read and approved by all authors.

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None.

CONFLICT OF INTEREST

None.

References

1. Götschke J, Walter J, Leuschner G, Gerckens M, Götschke M, Mertsch P, et al . Mucus Plug Score Predicts Clinical and Pulmonary Function Response to Biologic Therapy in Patients With Severe Asthma. *J Allergy Clin Immunol Pract.* 2025 May;13(5):1110-1122.
2. Prendergast A, Chacin-Suarez A, Benzaquen S, Minimo C. Partial lung collapse due to mucus plugging as an atypical presentation of asthma in adulthood. *CHEST.* 2023;164(4):A98.
3. Leatherman J. Mechanical Ventilation for Severe Asthma. *Chest.* 2015;147:1671-1680.