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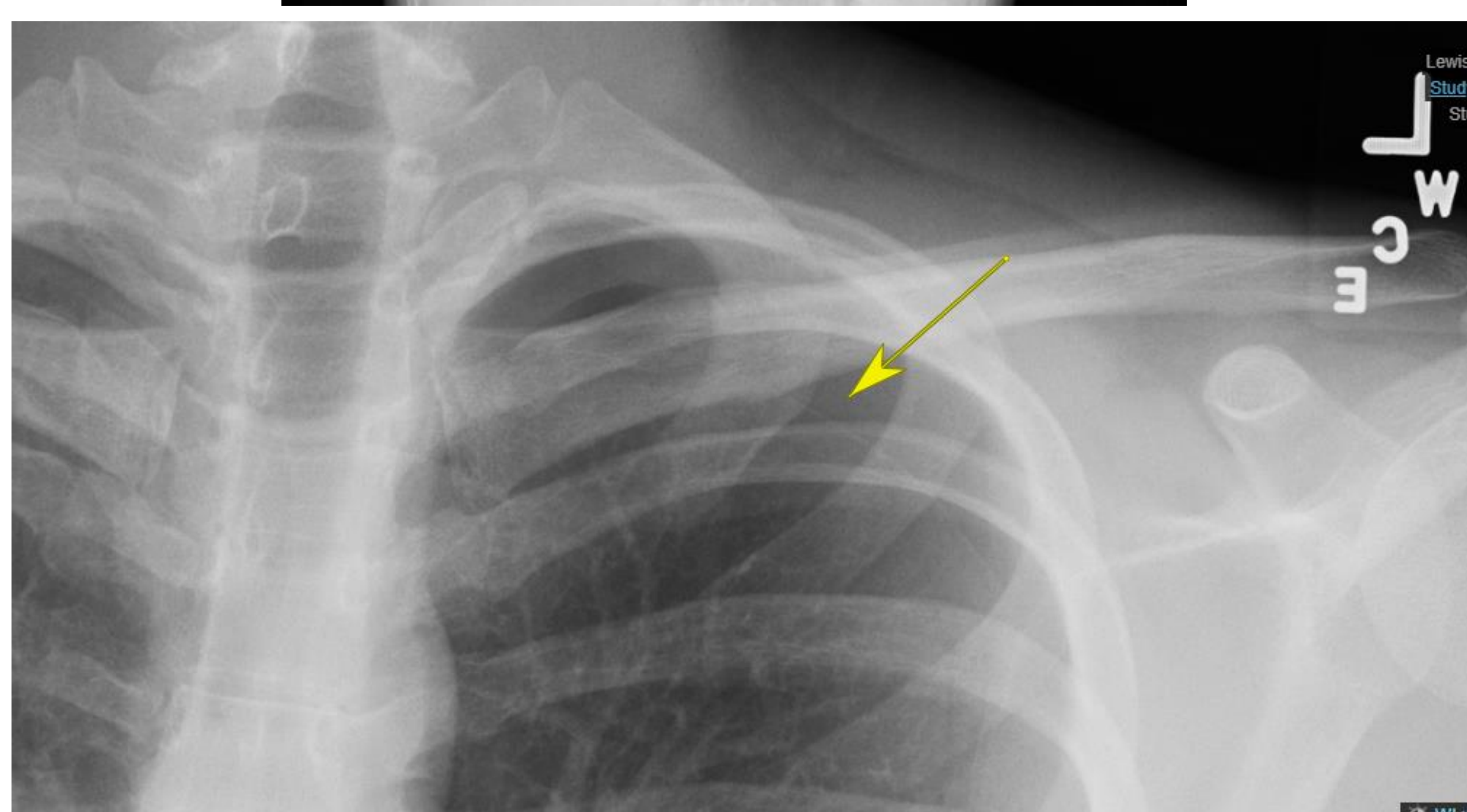
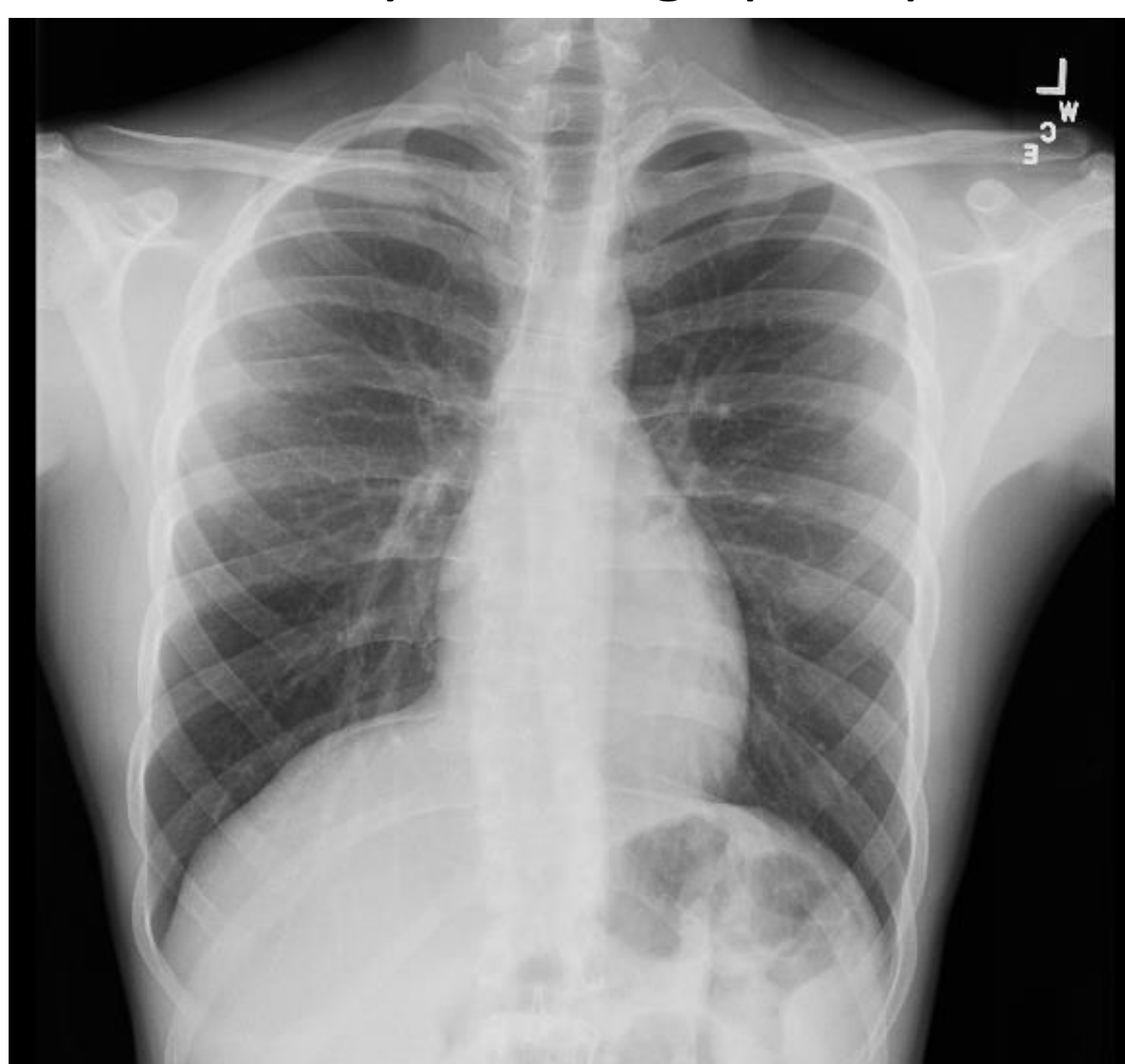
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## Background

- A 19-year-old Caucasian male with no significant past medical history presented to an outpatient family medicine clinic for evaluation of crampy back pain which started two days prior. Pain started when he was sitting in a chair and developed a sudden shooting pain in his back that radiated to his left chest which caused him to lie down. His pain progressed to severe pain when he would walk or take deep breaths as well as chest pressure. He rated his pain as 7-8/10 during those times and 1-2/10 when he was at rest.
- Patient reported that he does frequently run several miles at a time, denied any smoking or vaping history. He denied any shortness of breath or palpitations. He also stated that he has anxiety which is untreated and reported that he was under more stress recently.
- Vital signs were unremarkable. Physical exam was significant for some tenderness to palpation of left trapezius, lung exam was clear to auscultation bilaterally with no decreased breath sounds. The cardiac exam was unremarkable. An ECG was done in the office which showed sinus bradycardia with a rate of 55bpm.
- Differential diagnosis at time of visit included muscle strain, for which he was given stretches to do at home as well as a muscle relaxer, and pneumothorax for which a chest x-ray was ordered. X-ray was significant for a small apical left pneumothorax measuring 2.5cm.
- The patient was instructed to go to the emergency department for evaluation. He was also advised to avoid any physical exercise, flying, or diving. The patient went to the ED the following day and while there he had a repeat chest x-ray which showed some improvement in the pneumothorax, imaging was reviewed by general surgery who did not recommend any intervention and the patient was discharged home with close follow up.
- He was seen in clinic one week later and he reported complete resolution of his symptoms. A repeat chest x-ray was performed which showed resolution of the pneumothorax. Advised a gradual return to physical activity over the following two weeks with a follow up one month later. This patient was also referred to pulmonology to evaluate for possible causes of his pneumothorax.

## Imaging

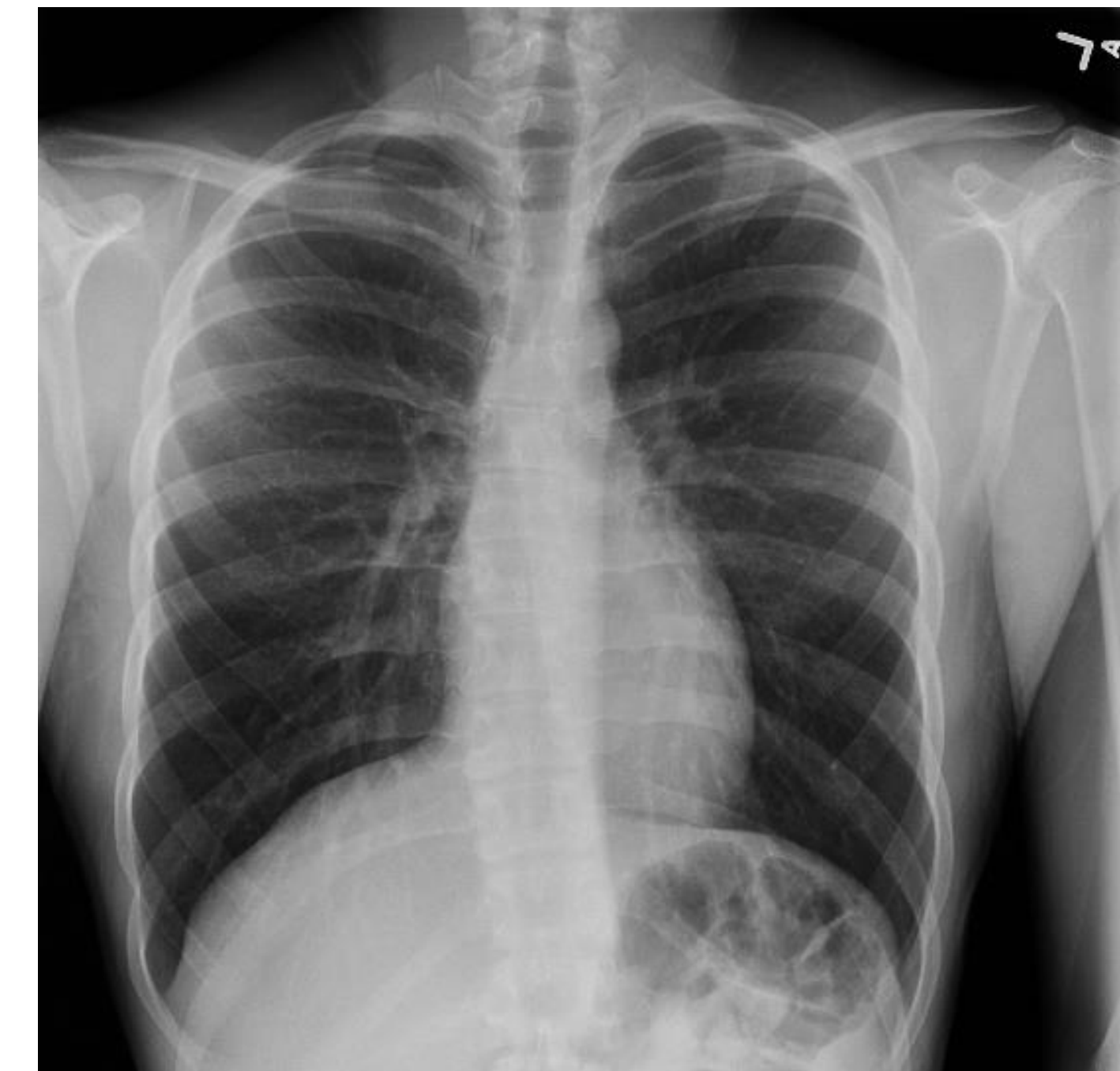
Initial chest x-ray showing apical pneumothorax



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## Follow-up Imaging

Repeat chest x-ray showing resolution of apical pneumothorax



## Discussion

- A primary spontaneous pneumothorax, or collapsed lung, by definition, occurs in the absence of underlying clinical lung disease or precipitating factor. Although this is not a common occurrence, with one report stating the incidence of occurrence in males at about 7.4 per 100,000 population per year in the United States<sup>1</sup>, it is a serious condition that primary care providers need to be able to properly diagnose and manage as it could potentially be life threatening and require emergent treatment.
- It can be difficult to diagnose due to symptoms, such as pain with breathing and moving or shortness of breath, which can be explained by more common causes such as musculoskeletal pain. With a stable patient, outpatient management without any invasive procedures may be appropriate.
- Proper management includes avoiding strenuous physical activity, avoiding changes in pressure such as flying or diving, patient education on when to go to the emergency department, and close outpatient follow up. During follow up the patient will need to undergo repeat chest x-rays until the pneumothorax has resolved.
- After resolution of the pneumothorax the patient should be instructed about a gradual return to full activity over at least two weeks<sup>2</sup>. In this case the patient was instructed to slowly return to running by initially increasing his walking distance for a few a days and slowly increasing speed from walk, to jog, to run, only if he was able to tolerate the previous step and to immediately return to clinic or go to the ED if he started to experience symptoms.

## Conclusion

Primary spontaneous pneumothorax in a stable patient can be properly managed in the outpatient setting with close follow up as well as a clear understanding of need for immediate evaluation in the emergency department if symptoms worsen. Once the pneumothorax has resolved, as made evident on chest x-ray, then gradual return to normal activity over the course of two weeks with continued follow up is appropriate.

## References

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2. Lee YCG. Treatment of primary spontaneous pneumothorax in adults. UpToDate. [https://www.uptodate.com/contents/treatment-of-primary-spontaneous-pneumothorax-in-adults?topicRef=6706&source=see\\_link#H243361](https://www.uptodate.com/contents/treatment-of-primary-spontaneous-pneumothorax-in-adults?topicRef=6706&source=see_link#H243361). Published September 7, 2022.