



## An Unexpected Finding on Chest Radiograph

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### Significance

Pseudocoarctation of the aorta is an uncommon finding but can present similarly to other pathologies on chest radiograph. The goal of this image challenge is to educate the reader on how to recognize pseudocoarctation on imaging and how to differentiate it from other pathologies.

**Keywords:** Pseudocoarctation, aortic coarctation, aortic kinking, chest radiograph

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### Challenge

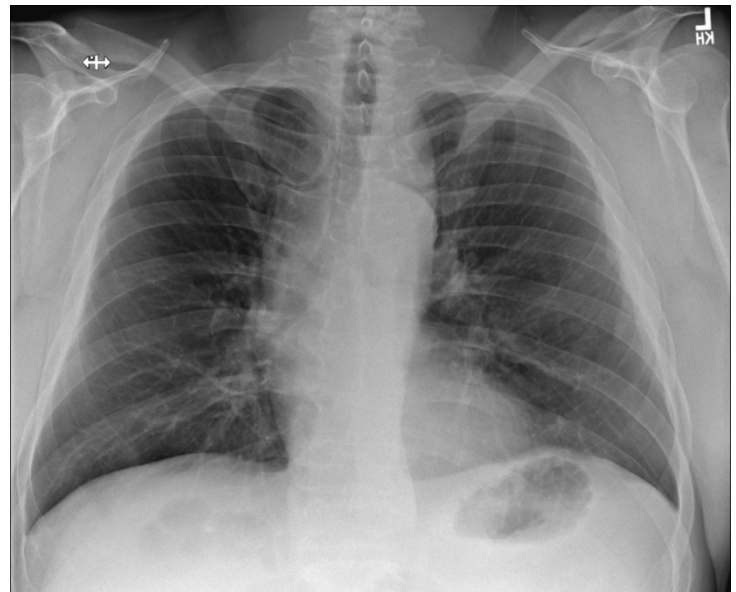
Identify the observed abnormality on the chest radiograph shown to the right (Figure 1).

### Case

A 51-year-old male presented to the emergency department with dyspnea.

### History of Present Illness

This patient reported a 3-day history of shortness of breath and cough. His medical history was significant for asthma, and his most recent use of albuterol a few hours earlier did not improve his symptoms. On presentation, the patient was found to have a blood pressure of 178/105 mmHg (MAP 117). Although he denied having hypertension, the patient did admit to taking lisinopril years ago. Physical exam was positive for cough and prolonged respirations but was otherwise unremarkable. Initial chest x-ray was performed to assess for chest pathology. An unexpected finding was identified which prompted follow-up evaluation with computed tomography (CT) imaging.



**Figure 1.** Posteroanterior chest radiograph.

### Differential Diagnosis

- A. Coarctation of the aorta
- B. Pneumothorax
- C. Sarcoidosis
- D. Pseudocoarctation of the aorta
- E. Aortic dissection

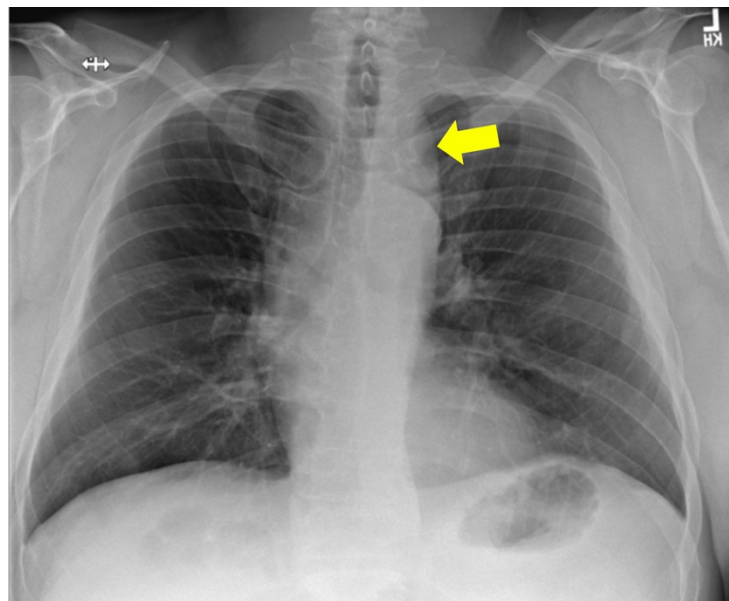
### Discussion

Pseudocoarctation of the aorta is an uncommon, but well-documented, anomaly. It is believed to be congenital in nature and occur secondary to an elongated aorta.

Consequently, the aorta may ascend higher than the clavicle and present with kinking and buckling at the level of the ductus arteriosus.<sup>1</sup>

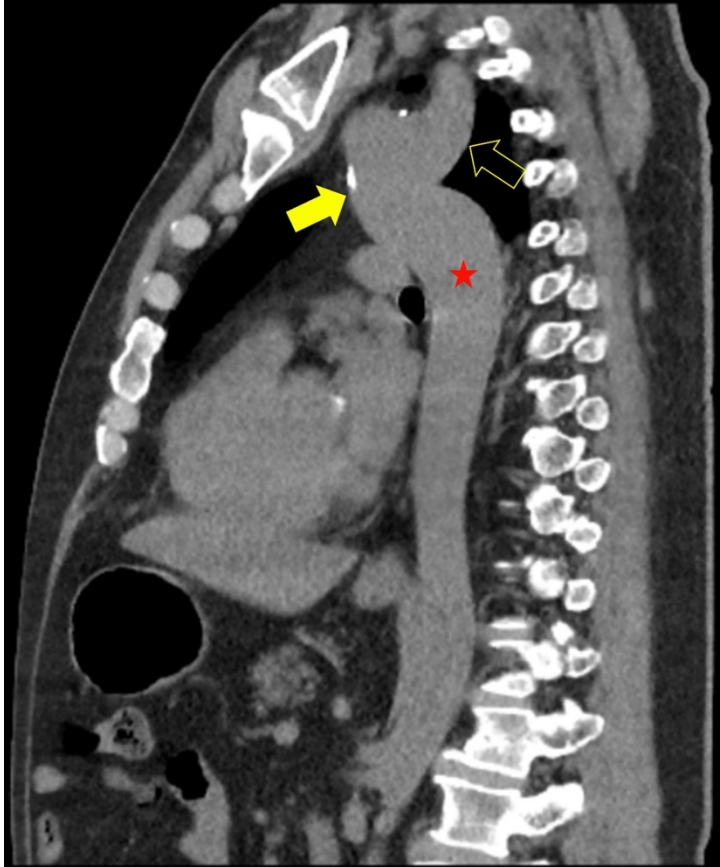
Pseudocoarctation of the aorta is typically an asymptomatic condition and may only be discovered incidentally on imaging. However, it is possible for patients to present with non-specific symptoms such as hypertension, unequal blood pressures in the extremities, dyspnea, dysphagia, chest pain, or cardiac murmurs. Potentially serious complications of pseudocoarctation include aneurysm formation and rupture, aortic regurgitation, and aortic dissection.<sup>2</sup>

On chest radiograph, pseudocoarctation of the aorta can present as a left superior mediastinal density or “figure 3 sign” (similar to coarctation of the aorta due to the kink).<sup>3</sup> This patient’s chest radiograph was significant for an abnormal mediastinal contour and left superior mediastinal density. The aortic arch appears to be high lying, elongated, and wide (Figure 2). Based on this chest x-ray, a differential diagnosis could include mediastinal mass, coarctation of the aorta, or pseudocoarctation of the aorta.



**Figure 2.** Posteroanterior chest radiograph. Abnormal left superior mediastinal density.

Abnormal mediastinal contour such as this should prompt further evaluation with CT imaging. On this patient’s CT scan, his aorta was found to be tortuous, elongated, dilated, and high-riding, ascending to the level of the left clavicle. In particular, his ascending and proximal descending aorta measured 4.2 cm and 4 cm in diameter respectively, both of which are considered dilated (normal ascending aorta is <4 cm; normal descending thoracic aorta is <3 cm<sup>4</sup>). Furthermore, a kink was observed immediately distal to the left subclavian artery without evidence of narrowing or stenosis of the aorta (Figure 3).



**Figure 2.** CT scan without contrast, sagittal view. The aortic arch (filled arrow) is high-riding and dilated. Kinking of the arch is observed immediately distal to the left subclavian artery (unfilled arrow) and there is dilation of the descending aorta (red star).

of coarctation of the aorta, pneumothorax, and sarcoidosis are unlikely since there is no rib notching, air within the pleural space, or hilar lymphadenopathy, respectively. Although there is mediastinal widening, the patient's lack of chest pain is inconsistent with aortic dissection.

This patient was ultimately treated for asthma exacerbation at the time of presentation and was subsequently referred to vascular surgery for evaluation of pseudocoarctation of the aorta.

## References

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