

Right Circumflex Aortic Arch: Aneurysmal Rupture and Severe Tracheal Stenosis

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Clinical Image

A 37-year-old man presented to the emergency department with sudden onset dyspnea and chest pain. His past medical and surgical history was unremarkable except for opium addiction. Blood pressure was 160/76 mmHg, and heart rate was 128 beats/min. Physical examination was notable for wheezing in lung auscultation. ECG was unremarkable except for sinus tachycardia. Arterial blood gas showed severe respiratory acidosis with PCo₂:92 mmHg, and then the patient became drowsy; therefore, endotracheal intubation was applied for him. Hence, due to clinical suspicion for aortic dissection, chest and abdominal CT angiography of the aorta was done. Axial CT Angiogram (Figure 1A) demonstrates the right aortic arch with left descending aorta as the circumflex

retro esophageal right aortic arch, causing severe tracheal stenosis. Aneurysmal dilatation in the aortic arch, posterior to esophagus, is noticed compatible with aneurysmal rupture. Also, aberrant left innominate artery, which arises from a small diverticulum after the aortic arch has crossed the midline to the left, is noticed (arrow in figure 1B).

Right circumflex aortic arch is a rare anomaly in which the aortic arch crosses the midline posterior to the esophagus above the level of the carina. This arch pattern is essential to diagnosis, as patients with severe symptoms may require an aortic uncrossing procedure for airway decompression [1]. Accordingly, the patient was developed mediastinal hemorrhage due to aneurysmal rupture (Figure 2). The patient died from anomalous arch complications before the operation.

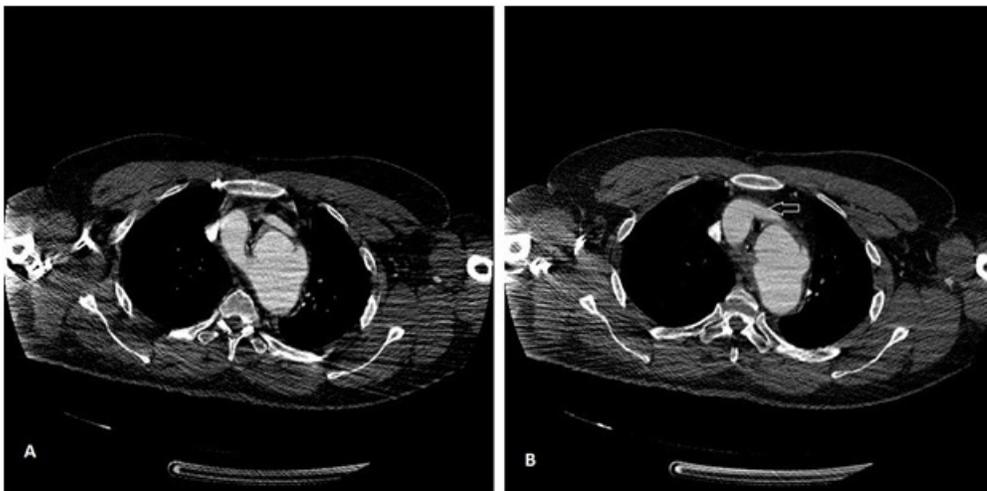


Figure 1: Axial CT angiogram of Right circumflex aortic arch caused severe tracheal stenosis



Figure 2: axial CT A ngiogram at the level of carina shows increase density in mediastinum suggesting hemorrhage

References

1. Hanneman K, Newman B, Chan F. Congenital variants and anomalies of the aortic arch. *Radiographics*. 2017; 37: 32–51.