Right aortic arch with aberrant left subclavian artery
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A fit non-smoker with a family history of lung cancer. A chest radiograph suggested a widened superior mediastinum.

A teacher and ex-paratrooper returned from a high altitude trekking holiday in Nepal complaining of weight loss. He was non-smoker but there was a family history of lung cancer. Physical examination was unremarkable. A chest radiograph showed a widened superior mediastinum. Bronchoscopy was normal. A contrast enhanced spiral CT was performed with surface shaded 3D vascular reconstruction.

Discussion:

A right sided aortic arch occurs in 1-2%. Right aortic arch with aberrant left subclavian artery is the commonest right aortic arch anomaly(35-72%). Right aortic arch with aberrant left subclavian artery has an incidence of 1:2500. It is associated with congenital heart disease in 5-10% of cases. This is the second most common cause of vascular ring after double aortic arch. Patients with this anomaly are usually asymptomatic as the ring around the oesophagus and trachea is loose. However it may present in infancy/childhood and very rarely in adults due to a tight vascular ring compressing the trachea or oesophagus. In adults this condition can be misinterpreted as a mediastinal mass because of widened mediastinum on chest radiograph. In this anomaly the left common carotid artery is the first branch of the ascending aorta followed by right common carotid and right subclavian artery. The left subclavian artery is the fourth branch arising from the proximal descending aorta via a remnant of the embryological left dorsal aortic root. Often there is a bulbous origin, the diverticulum of Kommerell. The left ductus arteriosus also arises from this diverticulum and extends to the left pulmonary artery completing the vascular ring. Extrinsic compression of the posterior oesophagus is caused by either the aberrant left subclavian artery, which takes an oblique course from right to left, or the posterior aspect of the aortic arch itself. There may be indentation of oesophagus or trachea on right side due to right aortic arch.

Differential Diagnosis List:  Rt. aortic arch with aberrant lt. subclavian art.

Final Diagnosis:  Rt. aortic arch with aberrant lt. subclavian art.

References:

Naidich DP, Webb RW, Muller NL, Krinsky GA, Zerhouni EA, Siegelman SS.
Computed tomography and magnetic resonance of the thorax.
Figure 1

Description: Smooth widening of the superior mediastinum

Origin:
Figure 2

a

Description: Four aortic arch branches are visible, two on the right and two on the left. Origin:

b

Description: The right and left common carotid arteries lie anterior to the right and left subclavian arteries respectively. Origin:

c

Description: Note the left common carotid artery anterior to the trachea. Origin:

d

Description: The left common carotid artery remains anterior to the trachea and the left subclavian is passing behind the oesophagus. Origin:
Description: The aortic arch is right sided and the left common carotid passes anterior to the trachea from the right side. **Origin:**

Description: The left common carotid origin is from the right sided arch. The origin of the left subclavian is from the descending aorta and is bulbous (diverticulum of Kommerell). **Origin:**
Description: There is a right-sided aortic arch. There are four arch branches. The first branch swings from the right to the left neck (left common carotid). The origin of the last branch (left subclavian) is aberrant. Origin: