Tortuous Aorta — A New Cause for Esophageal Chest Pain?

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Abstract
Three patients (average age 61 years) presenting with retrosternal pain were evaluated with barium studies of the upper gastrointestinal tract. In each case, the esophagus was significantly displaced by a tortuous aorta. All patients had sliding hiatal hernias; these hiatal hernias, and the esophagitis and disordered motility seen in our patients, could be a consequence of esophageal displacement by the tortuous aorta. Two patients were relieved symptomatically with antacids and metoclopramide. Thus, tortuosity of the thoracic aorta can cause esophageal chest pain.

Key words: Hiatus hernia

Introduction
The aorta is intimately related to the esophagus. Hence, tortuosity of the aorta can produce esophageal displacement and compression. Whereas dysphagia as a result of aortic tortuosity is well known, esophageal chest pain as a consequence has not been mentioned in the literature. We present a series of three patients in whom we believe esophageal chest pain resulted from a tortuous aorta.

Case Report
One male and two female patients aged 70, 45, and 10 years respectively, who presented with retrosternal pain with no aggravating or relieving factors, were studied. None of the patients was hypertensive. Clinical examination of the heart and electrocardiogram were normal in each patient. Chest roentgenographs showed normal sized heart and tortuous aorta in each case. The patients were, therefore, referred for barium studies to evaluate an esophageal cause for the chest pain.

Upper gastrointestinal series showed significant displacement and varying degree of compression of the thoracic esophagus by the aorta in all three patients. A small to moderate sliding hiatal hernia was present in each patient (Fig 1). Radiological appearance suggestive of esophagitis was present in the lower third in two patients. In one patient, there was significant bulging to the flow of barium in the middle third of the esophagus at a point corresponding to the compression by the tortuous aorta; disordered motility was seen at this site.

The patients were treated with liquid antacids and metoclopramide. They were also advised regarding modification of their food habits and to remain in an upright position for a while after ingestion of food. These benefited two patients who had almost complete disappearance of symptoms. The third patient, in whom esophageal dysmotility had been seen, did not benefit from this treatment.

Discussion
That a tortuous aorta can produce dysphagia is well known. However, a tortuous aorta has not been incriminated in the production of chest pain. Our findings raise the possibility that a tortuous aorta may be a cause for esophageal chest pain.

We believe that the sliding hiatal hernias in our patients were not incidental but a direct consequence of the tortuosity of the descending aorta. Most sliding hiatal hernias change in their degree with position, being more marked in the supine than in the erect position. However, the hernias in our patients, though small in degree, did not change size with position. This could be because the tortuous aorta pushed the esophagus laterally, resulting into a fixed longitudinal pull on the esophagus (Fig 2).

One cause of esophageal chest pain in these patients is esophagitis occurring due to either (i) alteration in the angle of His produced by displacement of the lower esophagus by the tortuous aorta, aggravating gastroesophageal reflux; or (ii) stasis produced by the tortuous aorta. Another possible contributor to the chest pain is abnormal esophageal peristalsis because
In most patients, no treatment aimed at correcting the tortuosity of the aorta can be offered. Treatment may, therefore, be directed at managing the reflux disease. If disordered motility is present, nitrates, calcium channel blockers or antispasmodic drugs may be tried.

This study suggests a new cause for esophageal chest pain. We believe that tortuosity of the aorta is responsible for production of hiatal hernia, esophagitis and disordered motility, factors which individually or collectively may be responsible for producing chest pain.

References