Chronic Aneurysm of the Descending Thoracic Aorta
Presenting with Right Pleural Effusion and Left Phrenic Paralysis

A 62-year-old man was admitted to the emergency department with chronic dysphagia and lower back pain. Chest radiography revealed a wide mediastinal shadow and an elevated left diaphragm, which proved to be secondary to left phrenic paralysis. The patient was diagnosed with an aneurysm of the descending thoracic aorta and was admitted to the hospital. After the patient was admitted, the aneurysm ruptured into the right chest. The patient underwent an emergency operation to replace the ruptured segment with a synthetic graft. Postoperative recovery and follow-up were uneventful. This report describes an unusual presentation of a thoracic aortic aneurysm. Hemidiaphragmatic paralysis caused by compression of the phrenic nerve is an unusual complication that, to our knowledge, has not been previously reported. (Tex Heart Inst J 1999;26:96-8)

Compression of the phrenic nerve and right pleural effusion appear to be unusual manifestations of a thoracic arteriosclerotic aneurysm. To the best of our knowledge, phrenic nerve compression secondary to thoracic aneurysm has not been reported before. We report the case of a patient who presented with progressive dysphagia and chronic lower back pain.

Case Report

In January of 1997, a 62-year-old man was admitted to our emergency department complaining of progressive dysphagia and weight loss. He had chronic pain in his chest and lower back, and hypercholesterolemia with normal blood pressure. Physical examination revealed a pulsating abdominal mass, but was otherwise unremarkable. Chest radiography showed an enlarged mediastinum and an elevated left diaphragm (Fig. 1). His white blood cell count was high (14,500 mm³), but all other parameters were normal.

Computed tomographic scanning of the chest and abdomen showed 2 aneurysms at different levels in the aorta. A thoracic aneurysm arose below the subclavian artery and extended downward to the diaphragm. It measured 10 x 8 cm, and had a large intraluminal thrombus. The 2nd aneurysm was found in the abdomen below the kidneys. The abdominal aneurysm included the proximal segments of both iliac arteries, and measured 7 x 7 cm.

The patient was admitted to our unit and surgical repair was scheduled. Thirty hours after admission, the patient experienced worsening of his chest pain. He became hypotensive and diaphoretic, and eventually lost consciousness. Resuscitative maneuvers were established and the patient was transferred to the intensive care unit for management and control. Auscultation revealed decreased respiratory sounds in the right side, and chest radiography revealed a large pleural effusion. An urgent computed tomographic scan showed that the thoracic aneurysm had ruptured and had created a large right pleural effusion (Fig. 2). The patient was moved to the operating room for urgent surgical repair of the ruptured aorta.

A left thoracotomy was performed through the 5th intercostal space, and it revealed a large thoracic aneurysm that arose 3 cm below the subclavian artery and extended downward to the diaphragm. There was no left pleural effusion, but the left lung had a severe adhesion to the aneurysm. The left diaphragm was
flaccid. No evidence of rupture was seen on the left side of the aneurysm.

The aorta was cross-clamped near the subclavian artery and again near the diaphragm, and the aneurysm was opened longitudinally without the use of circulatory bypass. A large tear was found on the right side of the aorta. A massive hematoma extended from the aorta posterior to the esophagus and entered the right pleural space. The hematoma involved the left phrenic nerve and put direct pressure on the esophagus. A 30-mm Hemashield graft (Boston Scientific Corporation; Natick, Mass) was interposed. The total cross-clamp time was 22 minutes. After adequate hemostasis was achieved, the chest was closed. A suction tube was inserted into the right chest, and it evacuated 500 mL of blood.

The postoperative course was uneventful and the patient was discharged from the hospital 15 days after the operation. His dysphagia disappeared in the weeks following the operation. The abdominal aneurysm was treated surgically 2 months later, with no complication. A routine follow-up visit showed improvement of his left phrenic paralysis 15 months after the 1st surgery.

Discussion

Most arteriosclerotic aneurysms are found in patients who are older than 60 years. Thoracic arteriosclerotic aneurysms are frequently associated with lesions at other vascular sites. Most are asymptomatic and are found as a mediastinal mass during routine noninvasive exploration. When symptoms and signs do present, they are usually related to rapid enlargement, which creates pressure on surrounding structures or obstructs them. Chronic pain that becomes unrelenting is the 1st and most common symptom.

If the pain becomes sharp, it usually indicates a sudden expansion or rupture of the aneurysm: the patient's clinical situation is worsening rapidly, and the risk of death is high.

The symptoms and signs of a thoracic arteriosclerotic aneurysm depend on its location. A large aneurysm of the descending thoracic aorta can compress the recurrent laryngeal nerve and cause hoarseness (although this occurs more frequently in aneurysms of the aortic arch). If it compresses the trachea or bronchi, it can cause coughing, hemoptysis, or wheezing. Further, as shown in the present case, compression of the esophagus can cause dysphagia. In our patient, only progressive dysphagia and chronic back pain were clearly related to the aneurysm. Hemidiaphragmatic paralysis caused by compression of the phrenic nerve is an unusual complication that, to our knowledge, has not been previously reported. Common findings on chest radiography are a wide mediastinum and, in the case of rupture, left pleural effusion. Right pleural effusion is an uncommon presentation, and usually suggests a medial rupture of the aorta with dissection of the posterior mediastinum into the right hemithorax. Absolute indications for surgical repair include all symptomatic aneurysms, a rapid increase in the size of an aneurysm, pleural effusion, or asymptomatic aneurysms larger than 5 cm in diameter.

The surgical findings in this particular case were interesting. First, we found that the aneurysm had expanded medially and was compressing the esophagus and the phrenic nerve. These findings accounted for the patient's progressive dysphagia and elevated hemidiaphragm at admission. The left diaphragm was found to be flaccid and nonfunctional, and this actually facilitated the distal anastomosis. The ruptured aneurysm dissected the tissue behind the esophagus and drained into the right chest. This dissection pro-
gressed slowly, and gave us time to make the correct diagnosis and take the patient to the operating room for surgical repair.

The patient's postoperative recovery was uneventful. Although chest radiography continued to show persistent elevation of the left diaphragm, we hope that the phrenic nerve will continue to recover function. We have already seen such recoveries in other patients who were injured during routine cardiac surgery. Delayed recovery may persist at 12 to 14 postoperative months, in accordance with the known rate of regeneration of peripheral nerves.6

References


