Aneurysms of the Ascending Aorta or Transverse Arch Presenting to the Left of the Spine*

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Aneurysms of the ascending aorta usually present to the right of the spine. Four patients with aneurysms of the ascending aorta or transverse arch presented to the left of the spine on the posteroanterior chest roentgenogram. On the lateral chest x-ray film, these were associated with the ascending aorta, and the apparent discrepancy led to diagnostic difficulty. All cases were proven by aortography and/or surgery.

The localization of aneurysms of the thoracic aorta on routine chest roentgenograms is usually not difficult. Aneurysms of the ascending aorta ordinarily present to the right of the spine on the posteroanterior (PA) chest x-ray film and anteriorly on the lateral. Those of the descending aorta are found to the left of the spine on the PA film and posteriorly on the lateral. There have been several reports of aneurysms of the descending thoracic aorta presenting to the right of the spine on the PA chest film.1-4

We have recently observed a group of patients with aneurysms of the ascending thoracic aorta or transverse arch which presented to the left of the spine on the PA chest film.

Case Report

Case 1

A 60-year-old black woman was admitted with left-sided chest pain, cough, and weight loss. Physical examination and laboratory studies were within normal limits. Chest x-ray film revealed a density superimposed on the proximal descending aorta and aortic knob on the PA film and associated with the area of the ascending aorta on the lateral view (Fig 1). The most likely diagnosis was felt to be neoplasm. Elevation of the left hemidiaphragm suggested phrenic nerve involvement which could have been due to neoplasm or aneurysm. Although aneurysm of the descending thoracic aorta was considered, this was felt to be unlikely because of the apparent discrepancy in location on the PA and lateral chest x-ray films. Frontal aortography only was performed, and the density proved to be a large aneurysm of the ascending aorta or transverse arch of the aorta projecting to the left of the spine (Fig 2). No surgery was performed.

Case 2

A 57-year-old white man was admitted with chest pain and a history of previous myocardial infarction. Chest x-ray

![Figure 1. Case 1A (left), view showing density superimposed on proximal descending aorta. B (right), Density is associated with ascending aorta on lateral view.](image-url)
Because lesions considered ascending film of Ficunx 604 ascending revealed ARTHUR descending density of aorta the inconsistency of the location of the mass.

The density was shown to be an unusual focal saccular aneurysm of the ascending aorta projecting to the left of the spine on frontal aortography. The patient refused surgery, and therefore, the etiology of this unusual aneurysm is not known.

CASE 3

A 56-year-old white woman was admitted with hoarseness and productive cough. Laryngoscopy showed paralysis of the left vocal cord. Except for weak pulses in the lower extremities, the remainder of the physical examination was normal.

A 4.5 X 4.5 cm rounded density was noted on the PA chest x-ray film and was partially overlying the descending aorta. On the lateral view, the density appeared to be associated with the ascending aorta and therefore was thought unlikely to represent an aneurysm. Bronchogenic neoplasm or mediastinal tumor were felt to be more likely diagnoses. Involvement of the recurrent laryngeal nerve could have been due to aneurysm or neoplasm. Bronchoscopy, bronchial washings, and mediastinoscopy were all negative. No aortogram was obtained. An exploratory thoracotomy revealed an aneurysm of the ascending aorta projecting to the left. No further surgery was performed, and the chest was closed. The postoperative course was uneventful.

CASE 4

A 69-year-old white man with a history of coronary artery disease was admitted to the hospital because of the recent onset of hoarseness. Paralysis of the left vocal cord was found, and a chest x-ray film revealed a density overlying the descending aorta on the PA view (Fig 3). On the lateral chest x-ray film, this mass appeared to be associated with the ascending aorta, and therefore, was thought more likely to be a bronchogenic carcinoma or other mediastinal mass rather than an aneurysm of the aorta. Because the possibility of aneurysm of the aorta could not be excluded and since bronchoscopy was negative, frontal aortography was performed (Fig 4). This revealed a large aneurysm arising from the ascending aorta and transverse arch of the aorta extending to the left so that on the PA projection, it was superimposed on the descending aorta. The patient refused surgery.
differential diagnosis included the following: (1) mediastinal and hilar lymphadenopathy from any cause; (2) bronchogenic carcinoma; (3) mediastinal tumors; and (4) pulmonary artery dilatation.

Aortography will reveal the true nature and location of these lesions in almost all cases and biopsy of a vascular structure can be avoided. Precontrast and postcontrast computerized tomography (CT) has also been shown to be useful in establishing the possible vascular nature of densities associated with the aorta. Problems may arise when the radiologist, because of the apparent inconsistency in the location of the mass, dismisses the possibility of an aneurysm altogether and no aortogram or CT scan is performed.

The explanation for the apparent discrepancy in the locations of these aneurysms is that some (case 1 and 4) arise from the medial (or left) aspect of the ascending aorta or transverse aortic arch, and therefore, project to the left of the spine. Others arise from the proximal aortic arch (case 2 and 3) and project to the left of the spine.

REFERENCES

2 Davis JC, Winsor P: Roentgen findings in aneurysm of the descending thoracic aorta. Am J Roentgen 1959; 81:819-825
4 Epstein B, Friedman RL: Arteriosclerotic aneurysm of the descending thoracic aorta presenting to the right of the spine. Radiology 1949; 53:93-96