Intrathoracic Aneurysm of the Right Subclavian Artery
- A Case Report -

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Introduction

Intrathoracic aneurysm of the subclavian artery is rare, but it is important to recognize because of potential complications, including rupture and dissection.

It usually appears as superior mediastinal mass, and as such must be differentiated from nonvascular mediastinal mass.

The diagnosis is typically confirmed by contrast enhanced CT, angiography or MRI. We report a case of surgically proven intrathoracic aneurysm of the right subclavian artery with chest radiographs, contrast enhanced CT, and angiography findings.

Case Report

A 48-year-old man was admitted complaining of dyspnea on exertion for 1 year which has been aggravated since 3 weeks prior to admission.
Physical examination revealed distension of neck veins.

He had moderate hypertension (150/90 mmHg).

The chest radiograph showed a well circumscribed mass in the right superior mediastinum displacing the trachea to the left. Lateral view indicated anterior location of the mass and showed a tubular calcification in the direction of the innominate artery (Fig. 1).

![Fig. 1. Chest PA and Lateral. A circumscribed mass in the right superior mediastinum displaces the trachea (arrows) to the left. Lateral view indicates anterior location of the mass and shows a tubular calcification in the direction of innominate artery.](image1)

Contrast media (100cc of Conray 60) enhanced computed tomography showed a well circumscribed homogenous soft tissue mass in right superior mediastinum displacing and compressing the trachea and vessels to the left, and a ring like calcification along the wall of the innominate artery (Fig. 2).

The mass was enhanced but not so much as adjacent vessels. The selective digital subtraction angiography of innominate artery showed large oval shaped aneurysm originated from just distal to the branch-off of right subclavian artery (Fig. 3). On operation, a 7×7×8 cm sized aneurysm was originated from the most proximal portion of the right subclavian artery with dirty sludge-like materials partially filling the lumen and the distal subclavian artery opened at posterior portion of the aneurysm.

**Discussion**

Aneurysms develop relatively often in the thoracic and abdominal aorta. They appear less often in the primary or secondary branches of the aorta, particularly in the innominate and subclavian artery.

![Fig. 2. CT scans with contrast enhancement. Sequential 2 cm. interval computed tomography scan shows a well circumscribed soft tissue density mass in the right superior mediastinum displacing and compressing the trachea to the left. A ring like calcification is seen along wall of innominate artery (Open arrow).](image2)

![Fig. 3. DSA. Digital subtraction angiography with the catheter in innominate artery shows a large oval shaped aneurysm at the most proximal portion of right subclavian artery.](image3)
Among the aneurysms of the major intrathoracic branches of the aorta, the innominate and left subclavian artery are most frequently involved\textsuperscript{1,2,5}).

Arteriosclerosis, trauma, and infection are the usual causes of aneurysm formation in the subclavian artery\textsuperscript{1,2,5}).

Although an aneurysm of subclavian artery is uncommon, it is important to recognize prior to percutaneous needle biopsy, mediastinoscopy, and surgery in order to avoid catastrophes.

In addition, accurate assessment of the vascular anatomy is crucial to the vascular surgeon.

Patients are usually asymptomatic, but may be present with dysphagia, pain, and aspiration into the bronchial tree due to compression\textsuperscript{5}).

In our case, dyspnea is the chief complaint due to compression to trachea and neck vein distension is also present probably due to compression to veins. Physical examination is usually noncontributory to the diagnosis\textsuperscript{1}).

Detection of this aneurysm is frequently an incidental radiographic finding\textsuperscript{1,2,5}).

The diagnosis of an aneurysm of subclavian artery may be suspected on plain chest radiograph by presence of superior mediastinal mass, which on lateral view is anterior in location. The aneurysm of subclavian artery must be differentiated from nonvascular mediastinal mass.

A careful search of curvilinear calcification in the periphery of the mass and in the direction of the intrathoracic branches of the aortic arch may be helpful for diagnosis\textsuperscript{1,2}).

In our case, a tubular calcification was present in the direction of innominate artery.

Contrast-enhanced computed tomography can depict all of the gross pathologic features of an aneurysm: dilatation, intraluminal thrombus, displacement or compression of adjacent structure and perianeurysmal hemorrhage\textsuperscript{3,4,6}).

In our case, we could not suggest as aneurysm correctly on contrast enhanced CT, because the CT findings were not typical.

Angiography is usually necessary to confirm and accurately assess the vascular anatomy prior to attempted resection\textsuperscript{1,2}).

In recent years MRI has provided sufficient diagnostic confirmation of aortic and arterial aneurysm\textsuperscript{4,5}).

Because of the absence of signal from flowing blood in MRI, excellent contrast is obtained between blood vessels and adjacent soft tissue structures without use of contrast agents.

MR can clearly demonstrate the origin of the aneurysm from the characteristic location off the aortic arch.

Evaluation of the vascular anatomy was enhanced by addition of direct coronal imaging\textsuperscript{5,7}). One potential difficulty with MR is determining whether the intraluminal increased signal is due to mural thrombus or slowly flowing blood. Cardiac gating may be helpful in this differentiation\textsuperscript{8}).

REFERENCES