A saccular superior vena cava aneurysm with unique diagnostic computed tomography findings

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Keywords
computed tomography, mediastinal tumour, saccular aneurysm, superior vena cava, venous aneurysm.

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Received: 13 June 2017; Revised: 22 July 2017; Accepted: 30 September 2017; Associate Editor: Sjaak Burgers.

Respirology Case Reports, 6 (1), 2018, e00281
doi: 10.1002/rcr2.281

Key message
A saccular superior vena cava aneurysm is a rare venous aneurysm that presents as mediastinal mass lesions. An evaluation using contrast-enhanced computed tomography is indispensable for the diagnosis.

Figure 1. Plain computed tomography scans showing nodules, bronchiectatic changes in the right upper lobe of the lung and a mass lesion in the anterior mediastinum (white arrow).

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health check-up. The radiograph showed nodular opacities in the right middle lung zone. Plain chest CT demonstrated pulmonary nodules and bronchiectatic changes in the right upper lobe of the lung and a mass lesion in the anterior mediastinum (Fig. 1). The pulmonary lesions were diagnosed as non-tuberculous mycobacteriosis. We initially believed that the mass was an anterior mediastinal tumour (such as a thymoma). CECT demonstrated an enhanced anterior mediastinal mass connected to SVC and a small air bubble within the mass (Fig. 2). We diagnosed her with saccular aneurysm of SVC. The diameter of her aneurysm was 30 mm; we therefore decided to observe her conservatively and started anticoagulant therapy for thromboprophylaxis.

An SVC aneurysm is a rare venous aneurysm. It has been classified into two types on the basis of the aneurysm morphology (i.e. fusiform or saccular aneurysm) [1,2]. To our knowledge, 42 cases of SVC aneurysms have been reported, 15 of which were saccular type. Although the classical diagnostic approach involves angiography, most SVC aneurysm cases recently reported have been diagnosed by CECT with or without 3D image reconstruction. Although the prognosis of SVC aneurysms is believed to be good, it was reported that one case died of pulmonary embolism complicated with venous aneurysm [3]. We therefore subsequently started anticoagulant therapy in the present case. The treatment strategy for SVC aneurysms has not been established; however, a recent report suggested that asymptomatic aneurysms <40 mm in diameter might be best approached with conservative observation and anticoagulant therapy [4].

CECT scan subsequently demonstrated that the mediastinal lesion showed a similar contrast pattern to SVC (Fig. 2B, C). This was a key finding for making the diagnosis of SVC aneurysm in the present case. In addition, a small air bubble within the aneurysm was visible on the CECT scan (Fig. 2A). We suspect that a small amount of air incidentally flowed into the blood vessels when contrast medium was injected. In the present case, an air bubble within the aneurysm was another helpful finding for making a diagnosis. The air bubble revealed that the mediastinal lesion was not a solid tissue but connected to blood vasculature.

The indications for performing anticoagulant therapy for SVC aneurysms are not well established. In our case, CECT showed that the bottom of the aneurysm neighbouring the SVC was strongly contrasted in the arterial phase and homogeneously contrasted to the same extent as the large blood vessel in the equilibrium phase (Fig. 2B, C). These findings indicated that venous blood flowed into the basal portion of the aneurysm and then spread. We speculated that the blood flow in a saccular aneurysm was slower than that in a fusiform one, and that a slower flow might be a risk factor for thrombus formation. Therefore, we decided to start anticoagulant therapy in our case.

We encountered a case of saccular SVC aneurysm with unique and helpful findings on CECT scan. An SVC aneurysm is rare, but it is a disease that can present together with mediastinal tumour-like lesions. The evaluation using CECT scan is indispensable for mediastinal mass lesions.

**Disclosure statements**

Appropriate written informed consent was obtained for publication of this case report and accompanying images.
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