Brachiocephalic venous aneurysm with unusual clinical observations

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Thoracic venous aneurysm is an extremely rare condition. This report describes the case of a 70-year-old woman with a left brachiocephalic venous aneurysm that caused recurrent nerve paralysis. Contrast-enhanced computed tomography and venography revealed a venous aneurysm, 4 cm in size, located adjacent to the venous angle. Anticoagulation therapy was started, and 1-1/2 months later, the aneurysm greatly decreased in size and showed marked calcification along its periphery. Venous aneurysms that shrink after anticoagulation therapy are exceptionally rare. The clinical features of this condition have been briefly reviewed. (J Vasc Surg 2011;54:77S-9S.)

Thoracic venous aneurysm is an extremely rare clinical entity. Most patients with such aneurysms are asymptomatic and can be safely observed without surgical intervention. In this report, we describe a case of left brachiocephalic venous aneurysm that was accompanied by intraluminal thrombus, caused recurrent nerve paralysis, and greatly decreased in size after administration of anticoagulant therapy. We have also discussed the clinical features of these aneurysms.

CASE REPORT

A 70-year-old woman was referred to our hospital for hoarseness and a cough that had worsened over the previous 4 months. She had been diagnosed with a 4-cm diameter left brachiocephalic venous aneurysm 12 years earlier and had been followed up by chest radiography performed at regular intervals; the aneurysm did not show any remarkable change in size during this period. Her medical history included appendicitis-associated peritonitis that had been treated 22 years ago with high-calorie infusion through a central venous catheter inserted via the left subclavian route. Hematologic tests showed a white blood cell count of 5730/mm³, hemoglobin level of 13.3 g/dL, C-reactive protein level of 0.08 mg/dL, and D-dimer level of 2.76 μg/mL. Contrast-enhanced computed tomography (CT) showed a left brachiocephalic venous aneurysm, 4 cm in size, with intraluminal thrombus and aneurysmal wall enhancement; the aneurysm was located adjacent to the venous angle (Fig 1). Pulmonary embolism was not detected. Venography showed a saccular venous aneurysm just proximal to the junction between the left internal jugular and subclavian veins (Fig 2), and arteriography showed that there was no arteriovenous fistulous communication. Laryngoscopy showed left recurrent laryngeal nerve paralysis, which was presumed to be associated with...
the venous aneurysm. No other venous malformation was observed during general physical examination and contrast-enhanced CT of the neck, chest, abdomen, and pelvis.

Anticoagulation therapy with warfarin was started to prevent pulmonary thromboembolic disease, and the patient was followed up closely by imaging tests performed at regular intervals. Contrast-enhanced CT performed 1-1/2 months after starting anticoagulant therapy showed shrinkage of the venous aneurysm (diameter, 2 cm), remarkable calcification along its periphery, and reduction of intraluminal thrombus (Fig 3, a and b). At 8 months after the initiation of anticoagulation therapy, the size of the aneurysm and the intraluminal thrombus further decreased (Fig 3, c and d). The hoarseness and cough completely improved during this period. At the follow-up after 1 year, the plasma level of C-reactive protein remained within the normal range and that of the D-dimer decreased to 0.09 μg/mL.

DISCUSSION

Brachiocephalic venous aneurysm is a rare condition, and less than 20 cases of such aneurysms have been previously reported in the literature. Potential causes of venous aneurysms include congenital malformation, trauma, inflammation, and degenerative changes in the vessel wall. The etiologic factors of the aneurysm in our patient remain unclear. The aneurysm might have been associated with the central venous catheterization that had been performed via the left subclavian route more than 20 years before the referral to our

Fig 2. Venography shows a saccular venous aneurysm just proximal to the junction between the left internal jugular and subclavian veins.

Fig 3. Contrast-enhanced computed tomography (CT) scan obtained at 1-1/2 months after the initiation of anticoagulation therapy shows shrinkage of the venous aneurysm, calcification along its periphery, and reduction of intraluminal thrombus (a and b). CT scan obtained at 8 months after the initiation of anticoagulation therapy shows further decrease in the size of the aneurysm (c and d).
hospital, because the patient had no other medical history that could explain aneurysm formation at that site.

Most patients with thoracic venous aneurysms are asymptomatic, and the lesion is incidentally detected as a mediastinal mass by a chest radiograph in most cases. However, these aneurysms can cause chest pain or dyspnea, and they may sometimes be associated with rupture or pulmonary embolism. Our patient complained of hoarseness and coughing caused by left recurrent laryngeal nerve paralysis, which is extremely rare. Although chest radiography, which was performed at regular intervals before the referral to our hospital, did not detect any change in the size of the aneurysm, slight enlargement of the aneurysm might have led to the displacement of the recurrent laryngeal nerve. Another distinguishing feature in this case was the aneurysmal wall enhancement detected by contrast-enhanced CT; this might indicate local inflammatory change, which may have induced the recurrent nerve paralysis.

Patients with asymptomatic thoracic venous aneurysms can be safely observed by imaging examination performed at regular intervals. Considering the clinical course of our patient, a follow-up contrast-enhanced CT at 1 to 2 months after diagnosis and every 6 to 12 months thereafter would be sufficient. However, surgical intervention should be considered in cases, wherein the aneurysms are symptomatic or they increase in size or cause pulmonary thromboembolism. Endovascular intervention involving coil embolization of the aneurysm and stent implantation in the parent vessel has recently been introduced as a safe treatment method of this condition. Although our patient complained of hoarseness and coughing, we opted for conservative treatment involving anticoagulation therapy to prevent pulmonary embolism, taking into account the degree of her symptoms and the risks associated with the surgical treatment. Consequently, the aneurysm unexpectedly showed remarkable shrinkage and peripheral calcification within a short period, and her symptoms resolved simultaneously. This observation is distinctly exceptional. The mechanisms underlying the change in the venous aneurysm in our patient remain unclear. Considering the marked reduction of the intraluminal thrombus concomitant with the shrinkage of the aneurysm, anticoagulant therapy seems to have played an important role in the shrinkage of the aneurysm. Warfarin may have contributed to the thrombolysis within the aneurysm, leading to the decrease in its size and recovery from the recurrent nerve paralysis. Peripheral calcification of the aneurysm might be considered a consequence of inflammatory reaction at the site, which was presumably induced during the remodeling process of the aneurysm wall.

REFERENCES


Submitted Mar 24, 2011; accepted May 3, 2011.