

Severe Pericardial Effusion Secondary to Late Iatrogenic Vertebrojugular Fistula

To the Editor:

Arteriovenous fistulae (AVF) are a recognized complication of vein puncture.

We describe the case of a 51-year-old woman who attended our hospital suffering from dyspnea. The patient had received a mechanical aortic prosthesis 3 months previously for treatment of severe aortic stenosis. Central venous catheterization during perioperative treatment proved difficult. The patient was receiving treatment with acenocoumarol.

The patient reported progressive dyspnea in the previous 2 weeks. Physical examination revealed normal blood pressure, holosystolic fremitus, and continuous grade V/VI harsh murmur in the right supraclavicular space. A third sand was present in the heart auscultation. The respiratory auscultation revealed bibasilar crackles. The chest radiograph did not reveal cardiomegaly but did show bilateral interstitial and alveolar infiltrates. An echocardiogram was performed, revealing severe pericardial effusion without signs of hemodynamic compromise (Figure 1A), right chambers of normal dimensions, normal function of the prosthesis, and normal left ventricular systolic function.

A cervical ultrasound scan revealed the presence of a high-velocity flow at the origin of the right jugular vein. Angiography revealed a fistula between the right vertebral artery and the right jugular vein (Figure 1B). Percutaneous closure of the AVF was performed with a drug-eluting stent

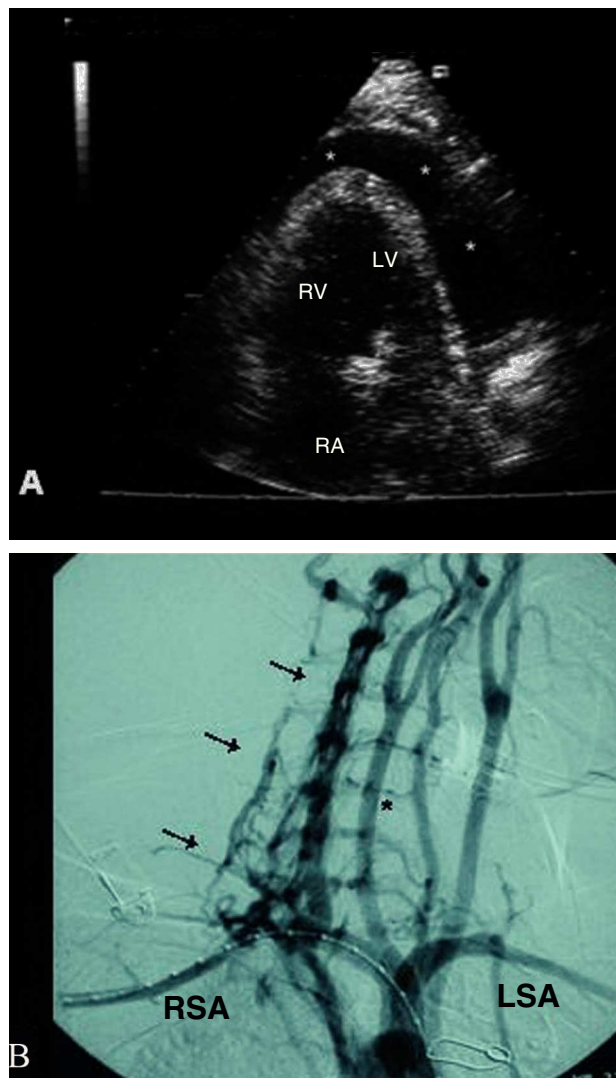


Figure 1. A) Severe pericardial effusion (indicated by *). B) Right vertebral-subclavian fistula (arrows); * indicates vertebral artery. RA indicates right atrium; RV, right ventricle; LV, left ventricle; RSA, right subclavian artery; LSA, left subclavian artery.

(Figure 2) and pericardiocentesis was performed with resolution of the symptoms. At follow-up the patient was found to be asymptomatic without evidence of relapse.

Central venous catheterization is frequently performed for the perioperative treatment of patients. Although the complications of the procedure have been widely described, the appearance of vertebral AVF is rare.¹ Vertebral AVF are generally posttraumatic or iatrogenic.

Angiography and percutaneous intervention are the techniques of choice for the diagnosis and treatment of lesions of the vertebral artery,² since invasiveness is limited, there is a reduced risk of neurologic complications, and the rates of recurrence and morbidity are low (0% to 5%), while associated mortality has not been reported.³

The anatomy of the vertebrobasilar artery system is such that the 2 vertebral arteries communicate with the basilar artery. If a lesion occurs in 1 of them, the contralateral artery is able to compensate for the imbalance. In addition,

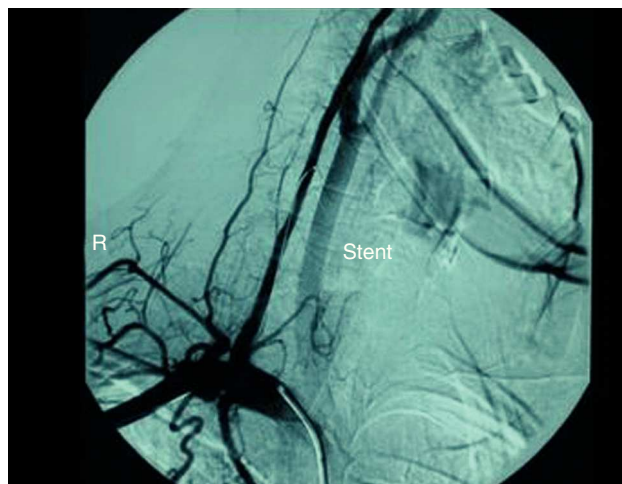


Figure 2. Stent implantation in the right vertebral artery to close the arteriovenous fistula.

there are potential collateral vessels through the circle of Willis. These anatomic characteristics explain the low risk associated with occlusion of a vertebral artery in the presence of a normal contralateral vertebral artery. Given that occlusion of a vertebral artery can lead to cerebral stroke, angiography of the contralateral vertebral artery should be performed to detect hypoplasia or an abnormal connection with the basilar artery.

While AVF is a known cause of high-output heart failure,^{4,5} the presence of pericardial effusion associated with iatrogenic AVF has not been previously described. The appearance of pericardial effusion under conditions of right heart failure is relatively common, as an expression of systemic congestion; in the case presented here, the presence of pericardial effusion may be explained by right heart failure related to the presence of a left-to-right extracardiac shunt.

Delayed iatrogenic AVF is extremely rare. In the case presented, the delayed onset of symptoms may have been related to anticoagulant treatment, which would have prevented possible spontaneous closure of the AVF.

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REFERENCES

1. Dodson T, Quindlen E, Crowell R, McEnany MT. Vertebral arteriovenous fistulas following insertion of central monitoring catheters. *Surgery*. 1980;87:343-6.

2. Mwipatayi BP, Jeffery P, Beningfield SJ, Motale P, Tunnicliffe J, Navsaria PH. Management of extra-cranial vertebral artery injuries. *Eur J Vasc Endovasc Surg*. 2004;27:157-62.
3. Felber S, Henkes H, Weber W, Miloslavski E, Brew S, Kuhne D. Treatment of extracranial and intracranial aneurysms and arteriovenous fistulae using stent grafts. *Neurosurgery*. 2004;55:631-8.
4. Sy AO, Plantholt S. Congestive heart failure secondary to an arteriovenous fistula from cardiac catheterization and angioplasty. *Cathet Cardiovasc Diagn*. 1991;23:136-8.
5. Lesoin F, Warembourg H, Asseman P. Fatal congestive heart failure associated with an iatrogenic caval aortic fistula following surgical removal of a herniated intervertebral disk. *Surg Neurol*. 1984;22:532.