Congenital Arteriovenous Malformation of the Vertebral Vessels in the Neck*

Case Report

JUVEUCIO ROBLES, M.D.†
Neurological Service, Clínica San Lorenzo, I.S.S.S.T.E., Mexico City, Mexico

Arteriovenous malformations involving the extracranial vertebral vessels are rare. Although traumatic and iatrogenic fistulas are more common and well documented in the literature, only two nontraumatic, spontaneous communications (malformations or angiomas) have been reported.

We have recently had the opportunity to study a case of congenital malformation, reported below.

Case Report

A 59-year-old woman was seen in consultation in November, 1966, for a cervical bruit of 15 years’ duration. This bruit had started abruptly after a sudden change of head position and had been accompanied by pain in the left side of the neck. There was a 3-year history of high blood pressure which had been medically controlled; a chest x-ray made at that time had revealed only mild enlargement of the left ventricle. A left carotid angiogram had been performed shortly after the bruit started, but no abnormal communication of the carotid and internal jugular vein had been recognized.

Neurological Examination. Except for a left perceptive hypoacusia related to a mastoidectomy 32 years before, neurological examination was normal. Visual acuity was 14/42 on the right and 14/35 on the left. A thrill was palpable over the upper left cervical region, and a continuous bruit was heard in this and the surrounding areas. Digital compression of the left carotid artery did not abolish the bruit. Extension and rotation of the head, especially to the left, decreased it. Blood pressure was 170/80 in both arms. Radial pulse rates were 60 bilaterally, and exercise of the left arm did not produce neurological discomfort. There was mild peripheral edema of both legs.

X-ray Examination. Chest x-ray showed marked cardiomegaly, mainly of the left cavities, and bilateral lung congestion (Fig. 1). Skull x-rays disclosed signs of chronic infection of the left ear. Cervical x-rays showed spondylisis, mainly of C-5 and C-6, with narrowing of this interspace. An electrocardiogram revealed right bundle branch block, atrial fibrillation, and extrasystoles.

Four-vessel angiography was done. The left carotid angiogram showed tortuosity of its proximal portion, as well as of the internal carotid artery near its origin; no filling of the posterior cerebral artery was obtained, and the intracranial arteries appeared nor-

Fig. 1. Chest x-ray showing cardiomegaly, mainly of the left side, secondary to the arteriovenous malformation of the vertebral vessels in the neck.
Congenital Vertebral Arteriovenous Malformation

A direct left vertebral angiogram revealed a tortuous vessel feeding a large arteriovenous malformation (Fig. 2 left); deep veins were filled bilaterally (Fig. 2 right), and a large vein draining the angioma was seen in the lower part of the malformation. No contrast medium was seen above the atlas. An indirect (brachial) right carotid and vertebral angiogram disclosed an enlarged and tortuous vessel, which not only filled the arteries of the posterior fossa but contributed to the angioma (Fig. 3). The right carotid artery was also tortuous, and its intracranial branches were normal. Some atheromatous changes were seen in the cervical vessels.

The patient refused surgical treatment.

Discussion

The bruit and the cardiomegaly with signs of heart failure as the only manifestations of the arteriovenous communication appeared after a sudden change of the position of the head. We doubt that this mechanism or the previous ear surgery was responsible for the malformation. Cardiomegaly and heart failure as signs of both intracranial and extra-

Fig. 2. Left vertebral angiograms. Left: Lateral view showing an enlarged and tortuous left vertebral artery filling a large angioma in the neck. Notice the large vein draining the lower part of the malformation. Right: Anteroposterior view showing bilateral filling of the deep cervical veins.

Fig. 3. Retrograde right brachial angiogram showing an enlarged and tortuous vertebral artery which not only filled the arteries of the posterior fossa but also contributed to the angioma.
cranial arteriovenous communications have been reported in children and adults. However, analysis shows that they are more common in children.

A continuous bruit like this always merits complete angiographic study to find not only the place but the nature of the lesion. The lack of neurological manifestations in this and other cases suggests a well-adjusted, chronic collateral circulation, preventing structural damage to the nervous system. In this case, the right vertebral artery not only provided posterior fossa circulation but also contributed to the angioma by retrograde filling of the left vertebral artery. In some cases, other arteries have been found to fill the arteriovenous malformation (thyroid axis artery and branches of the thyrocervical and costocervical trunks).

Summary

We have reported a case of congenital malformation of the vertebral vessels in the neck, which did not produce a cervical bruit and cardiomegaly with signs of heart failure until the patient was 44 years old.

References