Congenital Arteriovenous Fistula Between the Vertebral Artery and Vertebral Vein

Case Report

FRANK E. EHRLICH, LIEUTENANT COMMANDER, MC, USNR, LARRY CAREY, LIEUTENANT COMMANDER, MC, USNR, AND NICHOLAS P. KITRINOS, COMMANDER, MC, USN
Departments of Surgery and Neurosurgery, Naval Hospital, Chelsea, Massachusetts

SINCE the first report by Hunter in 1762, arteriovenous fistulas involving major blood vessels have been described in almost every area of the body. However, it has only been in recent years that a differentiation has been established between the congenital and traumatic origin of these fistulas. Congenital fistulas have not often been reported; those occurring in the major blood vessels of the neck have been reported even less frequently. This is a report of such a case.

Case Report

This 7-year-old boy was first admitted to the Naval Hospital, Chelsea, Massachusetts, on May 6, 1965, because of malaise of 4 months' duration. There was no history of trauma. The patient had been seen at another facility and transferred to this hospital because of a thrill and bruit in the left postauricular area.

First Examination. On May 9, a left percutaneous carotid arteriogram was interpreted as normal. On May 12, a left brachial angiogram showed a fistula between the vertebral artery and the vertebral vein (Fig. 1). On May 23, a right brachial angiogram confirmed that the lesion was extracranial. All other laboratory studies were normal, and on May 26, the patient was discharged, the case to be followed in the outpatient department.

Second Examination. On September 26, the patient was readmitted for definitive surgery. Again, detailed questioning of the patient and his parents by multiple examiners produced nothing that suggested a history of trauma. Right heart catheterization revealed a left to right shunt of about 1.7 liters/min. Preoperative blood studies, urinalysis, chest x-ray films, and electrocardiograms were normal.

Operation. On October 6, under general anesthesia, an incision was made along the anterior border of the left sternocleidomastoid muscle and dissection carried to the vertebral canal at the base of the skull. The canal was then unroofed. The fistula was visualized and excised between double 0 silk ligatures.

Postoperative Course. The patient tolerated the procedure well. After he was discharged he was followed in the surgical and

Received for publication April 1, 1968.

Editor's Note: The opinions or assertions contained herein are those of the authors and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.
neurosurgical outpatient departments at regular intervals. He remained asymptomatic and was readmitted in April, 1967, for a left brachial arteriogram. This was not successful and he was discharged. At the time of his last clinic visit almost a year later, he was asymptomatic. He had gained weight. He no longer had the thrill and bruit noted preoperatively, and his other symptoms had completely subsided.

**Discussion**

We have found only four similar cases reported, although congenital arteriovenous fistulas of other vessels in the neck have been reported. Shumacker, _et al._, in their article on vertebral arteriovenous fistulas, noted no previously reported congenital types. They reported their own case of congenital arteriovenous fistula between the vertebral artery and vein. This occurred in a 9-year-old girl and was corrected surgically with success. These authors also presented an excellent review of the surgical technique for treating these lesions. Chou and French, in their original series of vertebral arteriovenous fistulas, had no congenital types. Each of their 20 cases was of traumatic origin involving the vertebral artery and vein. However, a later paper by the same authors included a total of seven cases, three of which were congenital.

**Summary**

We have reported the successful diagnosis and surgical treatment of a rare case of congenital vertebral arteriovenous fistula.

**References**