ARTERIOVENOUS FISTULA OF THE MIDDLE MENINGEAL ARTERY AND THE GREATER PETROSAL SINUS

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Ten years ago Fincher reported a case of arteriovenous fistula between the middle meningeal artery and the greater petrosal sinus. His patient was a young woman whose symptoms appeared one month after recovery from a basal skull fracture. He was unable to find a similar case in the literature up to that time. He stated that the statistics from the vascular centers of World War II, which revealed a total of 814 aneurysms and arteriovenous fistulas, did not include a single case involving the middle meningeal artery. A careful survey of the literature since 1951 has revealed no other cases of similar nature. The present case differed from Fincher's in that it was spontaneous in onset.

CASE REPORT

The patient was 19 years old when she first appeared for neurological examination on Feb. 25, 1957. She noted the onset of a bruit in the region of her right ear in June 1956. No history of recent trauma could be elicited, even on persistent inquiry, nor could she recall any significant injury to her head during childhood. At first intermittent, the bruit gradually increased in duration and intensity. It was described as a "hum," although its character was variable, sometimes resembling a buzzing, ringing, or even whistling. While it was unaffected by postural changes, she discovered that pressure in the region of the right carotid sinus would decrease or abolish the sound.

In January 1957 the bruit was sufficiently loud to cause alarm, and by this time it was audible to her relatives and friends when they placed their ears next to hers. She moved to San Jose in 1957 and was examined by a general practitioner who detected the bruit with a stethoscope, as well as with the unaided ear. Roentgenograms of her skull were made at this time but were normal. Apart from occasional dull headaches on the right, she had no other symptoms.

EXAMINATION. Neurological findings were normal except for the bruit. A rather loud, harsh systolic bruit could be heard with the stethoscope in both temporal areas and over both orbits, but more plainly and louder on the right. The point of maximum intensity was just inferior and anterior to the lobe of the right ear. Compression of the common carotid artery on her right abolished the bruit, but compression of the one on the left had no effect. Her blood pressure was 112/70 mm Hg.

Roentgenograms of the skull, including views of the base, showed no abnormalities.

Since the bruit was loudest just anterior to the lobe of the ear, the initial impression was of an arteriovenous fistula of the superficial temporal vessels. Arteriography was performed on March 15, 1957 by percutaneous puncture of the right common carotid artery and using 50 per cent Hypaque. The first injection revealed a normal internal carotid circulation with little or no filling of the external carotid artery. The needle was repositioned and the second injection revealed good filling of the external carotid and its branches (Fig. 1). The middle meningeal artery was noted to be somewhat larger in diameter than usual. Also demonstrated was a fistulous communication between the proximal portion of the right middle meningeal artery and the greater petrosal sinus. The venogram revealed some dye remaining in the sinus and some could be traced without difficulty into the jugular bulb. No other abnormal vessels were seen.

Because the onset of the bruit had been spontaneous, with no apparent relationship to trauma, the possibility of an intradural tumor as the etiological factor was considered and, therefore, pneumoencephalography was performed. This showed no abnormalities of the basal cisterns or temporal horn. The cerebrospinal fluid findings were normal.

Operation. On March 29, 1957 the right external carotid artery was ligated just below the external maxillary branch. Upon recovery from anesthesia the patient observed the bruit had disappeared. She was discharged March 31, 1957.

Course. She has had no recurrence of the bruit or headaches. She has had two uneventful pregnancies. At the time of her last examination, on March 24, 1961, no bruit could be heard and there were no abnormal neurological findings.

COMMENT

Certain similarities and differences between this case and that reported by Fincher may be noted. Both fistulas involved the middle meningeal artery and the greater petrosal sinus. The patients detected the bruits themselves and in both it could be heard even without the stethoscope. Both patients were young women, although this is coincidental. In the author's case simple carotid ligation has proved to be effective treatment, whereas in Fincher's case this procedure had little or no effect, and craniotomy was necessary with eradication of numerous enlarged
extradural vessels, both arterial and venous, with clipping of an intradural middle meningeal artery. In Fincher's case the onset was related to trauma, whereas in the case reported here the onset was spontaneous. It may be that some congenital abnormality was responsible, in view of the lack of recurrence in 4 years.

SUMMARY

A case of spontaneous cranial bruit caused by an arteriovenous fistula between the middle meningeal artery and the greater petrosal sinus is reported. No return of symptoms has been noted during 4 years' follow-up after one-stage ligation of the external carotid artery at its origin. Only 1 similar case in the literature has been found.

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REFERENCE