CASE REPORTS

CAROTID CAVERNOUS FISTULA WITH SIGNS ON CONTRALATERAL SIDE

CASE REPORT *

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The fact that an arteriovenous fistula between the internal carotid artery and the cavernous sinus, because of anatomical variations, is apt to present clinical findings on the side opposite to that of the pathological lesion, has been previously reported by Doctors Dandy and Walsh. However, their cases were not verified by arteriography and, to the best of our knowledge, there is only one other case (personal communication of Sir Geoffrey Jefferson from England) in which careful and well done arteriographic studies demonstrated evidence of an internal carotid-cavernous sinus fistula on the side opposite to that on which the clinical signs were present.

CASE REPORT

#064436. S.E., a 54-year-old right-handed white woman, was admitted to the Neurosurgical Service of the Neurological Institute on Oct. 21, 1951. Her chief complaint was a pounding noise inside her head, related mostly to the left ear, since May 31, 1950.

On May 30, 1950, approximately at midnight, and for an unknown reason, she had fallen while going up the front stairs of her house. She was unconscious for 2–5 minutes and there was no apparent injury resulting from the fall. The patient went to sleep and the next day as usual she was at work. During the whole day she complained of headache and pain over her eyes, and the left eye began to feel “swollen.” She returned home and then about 10:00 p.m. on May 31, 1950 she noticed the sudden onset of a pounding noise “like hammering” inside her head, mostly localized to her left ear. This was a continuous noise, with exacerbations synchronous with her pulse. Immediately afterward her left eye became “harder” and completely closed, remaining that way for about 5 days. At the same time there was marked ecchymosis around the left eye, which progressively subsided in a few days. The left-sided ptosis gradually improved during the next 4 months. When her left eye began to open she noticed “double vision.” This disappeared within a period of 2 months. Since May 31, 1950 her left eye had appeared to be “blood shot,” mostly in the outer portion of the eyeball. There had been progressive protrusion of the left eye since the onset of her illness.

Examination. The left upper eyelid was full with congested veins. The conjunctiva showed generalized chemosis, greater in the left lower quadrant. There was a left, nonpulsating exophthalmos of 2 mm. Auscultation over the closed left eye revealed a loud bruit synchronous with her pulse. The bruit was not audible over the right eye. The bruit was not eliminated by left, right or bilateral carotid compression. Visual acuity: O.D. 20/20; O.S. 20/70 (not corrected). Visual fields were normal. Ophthalmoscopic examination showed engorgement of the veins of the left fundus. There was no papilledema. The III, IV and V cranial nerves were normal. There was no diplopia, but there was weakness of the left external rectus muscle. The rest of the cranial nerves were normal.

Laboratory Studies. Complete blood count, urinalysis, sedimentation rate, and Mazzini

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test were negative. The CSF pressure, cytology and chemistry were normal. Calorics and audiometrics were essentially normal. Skull x-rays, including special projections, were reported as negative.

**Impression.** Considering the history and physical findings, the diagnosis of arteriovenous fistula of the left internal carotid artery and the left cavernous sinus was made by all observers.

**Arteriography.** On Oct. 23, 1951, under local anesthesia, left common carotid percutaneous arteriography was performed. This failed to show any abnormality. The right common carotid artery was then entered and films revealed a large arteriovenous fistula in the right cavernous sinus. This drained through the anterior portion of the circular sinus into the opposite cavernous sinus and left superior ophthalmic vein (Figs. 1 and 2). Since the bruit was not obliterated by bilateral common carotid compression, percutaneous right vertebral arteriography was done. This showed a tremendous right posterior communicating artery supplying part of the carotid circulation, and explained why the bruit could not be eliminated by bilateral carotid compression (Fig. 3).

![Image of a right carotid arteriogram showing the arteriovenous fistula between the right internal carotid artery and the cavernous sinus.](image)

**Fig. 1.** The right carotid arteriogram shows the arteriovenous fistula between the right internal carotid artery and the cavernous sinus.
1st Operation. Two days later, on Oct. 25, 1951, the right internal carotid artery was exposed in the cervical region and a Selverstone clamp was applied. At that time a positive Babinski sign on the homolateral right side was noted before closure of the artery. During operation attempts had been made to take intra-arterial pressure recordings from both carotid arteries and for this purpose a catheter had been twice inserted in the left common carotid artery and once in the right common carotid artery. Following this, the Selverstone clamp was closed until complete obliteration of the right internal carotid artery was obtained. Since the right Babinski sign persisted and this was attributed to arterial spasm related to the two punctures of the left common carotid artery producing a reduction in the blood flow into this vessel and its branches, the Selverstone clamp was released and the wound was closed in a routine fashion. The patient was followed at 5-minute intervals and in 2 hours the right Babinski sign had disappeared. She continued to be closely observed and in view of the persisting negative neurological findings, the right internal carotid artery was completely closed with the Selverstone clamp 17 hours after the artery had been exposed.

The postoperative course was uneventful and one examiner was still able to hear a bruit, which was very soft as compared with the pre-operative one. However, the patient still complained of the “annoying noise inside her head.” The Selverstone clamp tools were re-
moved 72 hours after complete obliteration of the right internal carotid artery was accomplished.

2nd Operation. On Oct. 31, 1951, through a right temporal craniectomy, the right internal carotid artery was ligated intracranially. During the operation the corresponding posterior communicating artery was well visualized (Fig. 4).

Course. The patient showed a remarkable improvement which has persisted to date. The bruit objectively disappeared although the patient described a very faint “sizzling” noise in her left ear. The conjunctival chemosis subsided as well as engorgement of the veins of the left fundus, and the full veins previously noted in the left upper eyelid disappeared. The left proptosis clinically improved although exophthalmometer readings were the same. Visual acuity and visual fields were unchanged.

SUMMARY

1. A case is presented of a fistula of the right internal carotid artery into the right cavernous sinus, draining through the anterior part of the circular sinus to the left cavernous sinus and left superior ophthalmic vein. The clinical findings, however, suggested that the fistula was on the contralateral or left side. Apparently the patient’s right ophthalmic veins did not join with the cavernous sinus.

2. The bruit over the left eye was not obliterated by bilateral carotid compression because of a large right posterior communicating artery which carried blood to the fistula from the basilar artery.

3. This case emphasizes the importance of complete arteriographic studies in
order to obtain an accurate diagnosis of the side of the lesion and of the collateral circulation, both of major importance for proper surgical therapy.

4. The use of the Selverstone clamp made this patient’s management easier, considering the presence of arterial spasm on the side opposite to ligation, and prevented an additional operative procedure.

5. The surgical treatment of arteriovenous fistula between the internal carotid artery and the cavernous sinus, as described by Dandy, proved to be satisfactory in this particular case.

LEFT FRONTOPARIETAL MENINGIOMA WITH QUADRIPLEGIA

REPORT OF CASE

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Herniation of varying degrees of the tonsilla cereblli into the upper cervical canal from increased intracranial pressure commonly occurs. A herniation of the tonsilla from a large supratentorial left frontoparietal meningioma which caused compression of the upper cervical cord and medulla and resulted in quadriplegia as an initial neurologic sign and symptom appears to be of sufficient interest to record.

It must be emphasized, however, that cases of quadriplegia or paresis have been reported, either as a result of multiple meningiomas or meningiomas in the vicinity of the foramen magnum. Ecker1 reported a case of meningioma which arose from the clivus, anterior to the medulla, in which there was involvement of all extremities. Fiehl, Reese and Steelman2 in reporting 3 unusual cases of meningioma, described one case in which the meningioma was located at the level of the foramen magnum and resulted in the motor involvement of all extremities.

The following case is presented because of the puzzling and bizarre symptoms and signs which resulted from a single left frontoparietal meningioma that weighed 310 gm., and also to demonstrate the efforts that were necessary for the successful recovery of the patient.

A 44-year-old white woman in a semicomatose condition was admitted to the hospital on July 7, 1948. Her history was obtained from her family. Until her husband died in 1940 from an automobile accident, she had apparently been in good health. Since that time, however, she had become very nervous but was apparently well in every other way and was able to manage her own affairs.

Three years before admission the patient had remarried and had been doing well except for apparent nervousness which persisted and was noticed by her husband and relatives. In March 1948 she fell on the ice but did not lose consciousness. Since that time, however, she walked with some difficulty and had fallen several times because of weakness of the legs. This weakness became more pronounced during the last 2 months, and 2 weeks before admission the patient could not arise from a sitting position; she noticed that her arms were becoming weak and that she was unable to use her fingers or feed herself. She also had difficulty in swallowing and began to have spincter disturbance of the rectum and bladder. Further questioning of the husband revealed that the patient had complained of a severe

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