Importance of Angiography in Identifying False Aneurysm of the Middle Meningeal Artery as a Cause of Extradural Hematoma

Case Report

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There are 11 cases of posttraumatic false aneurysm of the middle meningeal artery in the world literature. Six of them were complicated by extradural hematoma. The purpose of this paper is to report one more case causing extradural hematoma and to emphasize the importance of angiography in diagnosis and treatment.

Case Report

A 22-year-old man was involved in a car accident. He momentarily lost consciousness. For the next 10 days, except for headache, he felt fairly well. On the morning of the 11th day he was found in semicoma.

Examination. There was right hemiparesis, neck rigidity, and moderate papilledema. The pupils were normal. Plain skull x-rays showed a linear fracture in the left parieto-occipital region. Internal carotid angiograms revealed an extracerebral hematoma (Fig. 1).

First Operation. A burr hole over the suspected area disclosed a large extradural hematoma. It was evacuated, apparently completely. No definite source of bleeding was found.

First Postoperative Course. The patient regained consciousness the following morning; the paresis and dysphasia were little improved. To investigate the cause of the incomplete recovery, selective external carotid angiography was done on the 8th postoperative day; it revealed a false aneurysm of the posterior branch of the middle meningeal artery (Fig. 2).

Second Operation. A small bone flap centered over the site of the false sac was raised. Evacuation of the underlying residual clot exposed the bleeding artery; the hemor-

Fig. 1. Selective internal carotid angiograms. Left: Arterial phase, showing contralateral shift of the anterior cerebral artery. Clear area overlying cortex indicates extracerebral hematoma. Right: Venous phase, showing avascular area overlying cortex. Preoperative impression: subdural hematoma.
rhage was easily controlled. The involved part of the artery was excised for histological examination.

**Histological Examination.** The specimen was an organized hematoma formed of fibroblasts, collagen fibers, and thin-walled capillaries surrounding the partially divided wall. The intima and lamina elastica ended at the hole in the arterial wall at its junction with the surrounding false sac (Fig. 3).

**Second Postoperative Course.** The patient’s course was uneventful, and he has progressed steadily toward complete recovery.

**Discussion**

The dramatic picture of extradural hematoma described by Jacobson\(^6\) in 1886, and emphasized by many authors,\(^9,16\) has been generally accepted. As a result of the use of angiography in head trauma, however, it has become clear that this classic description represents neither the most common nor the most hopeful group of cases.\(^4\) The work of Tönns and Frowein,\(^15\) Carton,\(^1\) and McLaurin and Ford,\(^5,11\) leaves little doubt that the clinical features of these favorable cases are extremely variable and that angiography is a reliable and safe method of diagnosis. The long drawn-out course, characteristic of all the extradural hematomas of false aneurysmal origin, provides ample time to make angiography a practical method of diagnosis.

**Fig. 2.** Selective external carotid angiograms, lateral view (left) and anteroposterior view (right). False aneurysmal sac is seen in the course of the posterior branch of the middle meningeal artery.

**Fig. 3.** Photomicrograph of longitudinal section of the artery at the point of rupture. Distal to that point, the arterial wall is seen curling up on itself.