Giant intracranial aneurysm

Case report

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Giant aneurysms are rarely reported in the literature concerning intracranial aneurysms,5-8 and even rarer are aneurysms whose course indicates an intracranial rather than vascular lesion.1,9,10 We are presenting a case with both of these features, which also demonstrates the inadequate correlation between angiographic and operative findings.

Case Report

An 18-year-old boy developed symptoms over a 3-month period of an intracranial space-occupying lesion, including defective vision. He was admitted to the neurosurgical department a few days after his first generalized epileptic seizure.

Examination. The neurological examination showed exaggerated reflexes of the left extremities and transitional dilatation of the right pupil. The visual acuity of the right eye was diminished to 6/18, but the perimetric examination of the field of vision disclosed no defects, and the fundus was normal. The pulse rate and arterial blood pressure were normal. The electroencephalogram (EEG) revealed delta waves with distinct preponderance in the right frontoparieto-temporal region. The skull films showed a ring-shaped calcification about 3½ cm in diameter above the sella turcica on the right side (Fig. 1). Right carotid angiography in the Towne and oblique projections disclosed in the suprasellar region a large roundish accumulation of contrast medium about 2½ cm in diameter corresponding to an aneurysm that seemed to be connected by a peduncle to the internal carotid artery at the site where the posterior communicating artery was branching off (Fig. 2). Radiograms made in the lateral projection also revealed a marked straightening of the siphon of the carotid artery and an upward displacement of the middle cerebral artery. Left carotid angiography showed a normal arrangement of blood vessels.

Operation. The operation was performed by a temporal approach under neuroleptanalgesia, normothermia, and normotension. After incision of the dura mater and resection of a thin cortical layer of the temporal pole, a nodular formation 7 x 3½ cm became visible in the anterior and central parts of the temporal region. The internal carotid artery was displaced upward by a fragment of the aneurysm, compressing the right optic nerve. A wide pulsating peduncle of the aneurysm was found posterior to the carotid artery at the origin of the posterior communicating artery. A ligature was put around the peduncle, and then the whole aneurysmal pouch was...
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isolated. The medial aspect of the aneurysm consisted of a pulsating sphere the size of a ping-pong ball, whereas its posterior and lateral aspect were composed of a solid and hard nonpulsating tumor. Before tightening the ligature, the cartilage-like aneurysmal wall was pierced with a knife; this caused only moderate bleeding, without marked flaccidity or collapse of the mass. The ligature was then tightened; during this procedure the lumen of the carotid artery became 25% narrower. The aneurysm was cut off at its base and totally removed. The interpeduncular fossa, which had previously been filled with aneurysm, was now free, and the brain-stem structures returned to their normal position. Histopathological examination showed that the aneurysmal wall was composed of the fibrous connective tissue with calcifications, inflammatory infiltrations, and an adhering mural thrombosis (Fig. 3).

Postoperative Course. Recovery was complicated during the first 24 hours by left-sided jacksonian fits; these did not recur. Paralysis of the right oculomotor nerve and slight left-sided homonymous upper-quadrantopia also appeared. The neurological state was otherwise the same as before operation. The patient displayed full motor function and moved about without difficulty; his headache almost completely disappeared. The postoperative EEG showed distinct improvement, with only slight pathological changes in the frontotemporal leads on the right side. Repeat right carotid angiography revealed amputation of the segment of the internal carotid artery peripheral to the site of the aneurysmal insertion (Fig. 4). During angiography of the left carotid artery it was found that the branches of the right carotid artery filled via the anterior communicating artery. The ligation of the base of the aneurysm had probably led to stenosis of the carotid artery, impairing its patency, fortunately without any neurological deficits.
Discussion

The so-called giant aneurysms are most often encountered in the supra- or parasellar regions and only exceptionally in other locations. They generally originate from one of the internal carotid arteries, more rarely from other arteries. Due to their location they usually give rise to a definite clinical syndrome characterized by signs of compression of the optic nerves or chiasm, and by radiological changes in the form of lateral erosion of the sella turcica and anterior clinoid process. These changes may coexist with calcifications in the aneurysmal wall, which may make diagnosis from the plain film easier. Owing to their proximity to the optic nerves and chiasm, these large lesions may lead to increasing limitation of the field of vision or the syndrome of intracranial hypertension before rupture. Since the course of large parasellar aneurysms may be associated with the signs of hypophyseal insufficiency, they may sometimes be diagnosed as pituitary neoplasms, and only angiography will settle the question.

In our case neither the history nor clinical condition of the patient gave any unmistakable hints as to the presence of an aneurysm. Particularly, the presence of a tumor could not be excluded. In fact, although calcification suggested an aneurysm, the nontypical clinical course of the

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Fig. 3. Photomicrograph of a section of the removed aneurysm. H & E, X 63.

Fig. 4. Postoperative right carotid angiography. Left: Lateral projection. Right: Towne projection.
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The size of the aneurysm revealed by angiography and its real dimensions in situ confirms once again that angiographic examination of an aneurysm may sometimes give inadequate and misleading results.

In certain cases of giant aneurysm, ligation of the carotid artery in the neck may have its advantages. In our case this method could not be considered owing to the presence of a space-occupying lesion in the temporal region. Even if ligation of the carotid artery had led to complete obliteration of the aneurysm, the procedure would have left a rather large focus involving the temporal lobe.

Fig. 5. Preoperative right carotid angiography, Towne projection, with the real size of the aneurysm outlined.

disease suggested the presence of an encapsulated tumor. Therefore, it was only the angiographic picture that allowed us to diagnose a large suprasellar aneurysm. The upward displacement of the middle cerebral artery revealed in the lateral projection was considered to be caused by a subtemporal hematoma from the ruptured aneurysm. Not until operation did we ascertain that the part of the aneurysm that filled with contrast medium during angiography constituted only about one-third of its total volume. The remaining part penetrated the anteromedial temporal region and was filled with fibrous connective tissue, partly calcified, with inflammatory infiltrations (Fig. 5). The greater part of the aneurysm, unseen during angiography, was responsible for the displacement of the middle cerebral artery in the angiographic picture, which was mistakenly ascribed to the presence of hematoma. This striking disproportion between the

References


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