The classical features of subarachnoid and intracerebral hemorrhage associated with brain tumors have been reported by others. This is believed to be the first recorded instance of a true cerebral aneurysm associated with and caused by a metastatic tumor. In this instance, it is apparent that aneurysmal rupture heralded the symptomatic presence of a previously silent metastatic tumor.

**Case Report**

A 32-year-old woman was brought to the emergency room on February 13, 1970, after having suffered a brief loss of consciousness. She had experienced headaches and vomiting for 3 days. There was no history of cranial trauma.

**Examination.** The patient was found to be normotensive and somewhat lethargic. There was a complete right oculomotor nerve palsy with a dilated pupil and ptosis, accompanied by a profound left hemiparesis. Lumbar
puncture revealed bloody spinal fluid with supernatant xanthochromia and crenated red blood cells. A right carotid arteriogram revealed a cortical aneurysm arising from the ascending anterior parietal branch of the middle cerebral artery (Fig. 1). Associated with and surrounding the aneurysm was an apparent intracerebral hematoma.

Operation. Right frontoparietal craniotomy was performed on the day of admission. A cortical aneurysm partially surrounded by hemorrhage was totally excised. The artery beyond the aneurysm was clipped. A large subcortical tumor mass, which was directly continuous with the area of hemorrhage, was likewise removed.

Histological Examination. The arterial wall and a portion of the aneurysm base (Fig. 2) was seen to be invaded from within the lumen by highly anaplastic tumor cells which destroyed the intima and replaced most of the smooth muscle. The main tumor mass represented undifferentiated carcinoma of undetermined origin.

Postoperative Course. The patient’s neurological deficit significantly improved in the next 3 days. On the fourth day, however, she developed severe respiratory insufficiency and died. An autopsy revealed widespread metastatic involvement of the lungs, ovaries, and mediastinum. The exact site of origin of this cancer could not be determined.

Discussion

The histopathological examination of this patient’s lesion suggests how tumor invasion from within the cerebral arterial wall caused
formation of the aneurysm. This is in contrast to the case recently reported by Reina and Seal\(^3\) in which tumor invasion of the artery from outside to inside caused a false aneurysm. This oncotic aneurysm has a striking parallel in its dynamic development to the mycotic cerebral aneurysm.\(^3\) Both develop a weakness from within the arterial wall. Both also seem to have a propensity for the middle cerebral circulation as do tumors and abscesses of embolic origin. In this individual a unique set of circumstances in cerebral metastases resulted in aneurysm formation. The tumor deposit, at least in part, took growth in the wall of a fairly large arterial branch while still preserving distal circulation. This combination of tumor invasion and preservation of arterial flow led to the development of a true oncotic aneurysm.

References


Address reprint requests to: Fredric A. Helmer, M.D., Suite 204, Medical Arts Building, 8483 Holly Road, Grand Blanc, Michigan 48439.