Unusual Vascular Malformations and the Value of Cerebral Arteriography in Patients with Mass Lesions

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Intracranial aneurysms and arteriovenous malformations constitute one of the most frustrating neurosurgical problems. These are particularly difficult to treat when infra- and supratentorial lesions coexist or when an arteriovenous anomaly and an aneurysm are present in the same patient. A similarly challenging situation arises when an arteriovenous malformation of the posterior fossa is presented as a mass lesion, especially since pneumoencephalography may demonstrate a “tumor.” Incomplete arteriography may lead to ill-planned or unnecessary procedures in such cases. Case 1 aroused our interest in this problem and led to a continuing search for similar situations. An additional 10 cases have been found during the past few years.

Case Reports

Case 1. Boston Veterans Administration Hospital U4661. E.H., a 34-year-old male maintenance worker, was admitted on Oct. 3, 1959, 6 hours following sudden onset of vertigo with “weakness” of legs causing him to fall to the ground. Severe occipital headache began 15 minutes later and became increasingly severe.

In 1948 he had been treated at another hospital because of a right 3rd-nerve palsy, right hemiparesis, slurred speech and retro-optic pain. Pneumoencephalography (Fig. 1) showed evidence of a large tumor of the midbrain. A Torkildsen procedure was done, and the patient was given roentgen-ray therapy. His symptoms progressed and on July 19, 1950 exploration was performed with visualization of an “exceedingly vascular” tumor, thought too vascular for biopsy. Diagnosis on discharge was brain-stem glioma.

Although there had been some worsening of symptoms the patient had worked the 9 years prior to the present admission. He had special “crutches” on his glasses to hold up ptotic eyelids.

Examination. The patient was alert and ori-...
sion of findings or symptoms when last seen in July 1962.

Comment. At the time of the original operation in Case 1, vertebral arteriography rarely was done. Even today many neurosurgeons would be tempted to operate in such a case on the basis of the air study. Vertebral arteriography would have prevented an operation. Furthermore, this is an excellent example of a long survival of a patient with a "brain-stem glioma.

Case 2. Massachusetts General Hospital #1218352. M.M., a 35-year-old white married woman, was admitted on Dec. 26, 1962 following sudden onset of severe headache and nausea.

Examination. Neurologic findings were normal. Lumbar puncture revealed grossly bloody cerebrospinal fluid. Bilateral carotid arteriography demonstrated bilateral aneurysms of the posterior communicating artery (Fig. 3).

Operation. On December 28 bifrontal craniotomy was done with application of plastic to each aneurysm. No definite site of hemorrhage was seen, although the right aneurysm was adherent to the 3rd nerve.

Course. Postoperatively, except for a right 3rd-nerve palsy, there were no neurological abnormalities. On January 19, without any symptom or warning, she suddenly became comatose with bilaterally dilated fixed pupils and decerebrate posturing. Ventricular tap yielded grossly bloody fluid with an elevated pressure. The bone flap was removed, the patient’s temperature was lowered to 32° C. and Decadron was instituted. After a stormy and prolonged recovery, she had a left hemiparesis and left homonymous hemianopsia. Further arteriography showed considerable spasm of the entire intracranial circulation but vertebral arteriography demonstrated a large aneurysm of the right posterior cerebral artery (Fig. 4). Because of her moderate deficit, no further operation was done, except for an acrylic cranioplasty requested by the patient and her husband.

Comment. A preoperative vertebral arteriogram in Case 2 would have disclosed the third aneurysm and at least would have led