Aneurysms of the Posterior Cerebral Artery

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Aneurysms of the posterior cerebral artery are unusual; their surgical treatment demands great care for the central perforating branches of this vessel irrigate the midbrain and thalamus while the main trunk nourishes the optic radiation and visual cortex.

Experience has been gained with eight cases of which six were operated on, with one death (Table 1 and Fig. 1). Although there were no field defects, one patient had an incomplete hemisensory deficit and another developed a delayed hemiplegia from postoperative temporal lobe swelling.

Aneurysms arise from the posterior cerebral artery most commonly at the first major branching as it winds around the midbrain hidden under the hippocampal gyrus; more rarely, they arise from the first portion of the posterior cerebral artery in front of the crus cerebri at or near the junction with the posterior communicating artery.

Their incidence in the Co-operative Study was 22 in 2672 cases (0.8%). Undoubtedly this figure is too low, in that vertebral angiography was done in only 27% of cases. None of our cases had multiple aneurysms, although in Case 8 there was an associated arteriovenous malformation in the ipsilateral occipital lobe.

There are very few reports of surgical treatment of posterior cerebral aneurysms except for isolated cases. Of those cases cited in the Co-operative Study, four were operated on directly and two died; one did well and the other survivor was disabled.

Case Reports

Case 1. This 56-year-old man was admitted in June, 1957, 1 month after a verified subarachnoid hemorrhage. During the previous week he had developed a complete right third nerve palsy, and in the preceding 24 hours, a left hemiparesis.

Vertebral angiography revealed a large saccular aneurysm arising from the proximal segment of the right posterior cerebral artery. The patient refused operation, and is still alive 11 years later although now confined to a wheelchair with a complete left hemiplegia and right oculomotor palsy.

Case 2. This 66-year-old Scottish woman was admitted in April, 1960, after three subarachnoid hemorrhages. She was drowsy, with bilateral extensor plantar responses and paresis and analgesia of the right arm. A saccular aneurysm arose from the left posterior cerebral artery at the point of first branching. Operation was delayed for 25 days because of continuing stupor; the aneurysm was then clipped under moderate hypothermia. Although the patient remained apathetic for several weeks, her ultimate recovery was excellent, without residue. There was never a field defect.

Case 3. This 59-year-old woman was admitted in September, 1962, for the investigation of an incomplete left third nerve palsy which had begun with ipsilateral orbital and temporal pain 6 weeks before. Angiography revealed a saccular aneurysm arising from the first portion of the posterior cerebral artery near the junction with the posterior communicating artery. As the palsy was showing early signs of recovery and there was no certainty that a rupture had occurred, she declined operation. There was eventual complete recovery of third nerve function and she has remained well for 6 years.

Case 4. This 42-year-old nurse was admitted stuporous following her first hemorrhage in June, 1963. There was a large fusiform aneurysm of the right posterior cerebral artery at the point where it curved around the crus about 2 cm from its origin. Three more hemorrhages occurred in rapid succession. The last, ½ hour before operation, rendered her deeply unconscious with a complete left hemiplegia. The aneurysm was fusiform and fragile, and in spite of attempts to do other-

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wise, it proved necessary to clip the posterior cerebral artery on either side to control bleeding when the sac burst. She survived only a few hours.

Case 5. This 49-year-old man was admitted following a single subarachnoid hemorrhage in January, 1964. He was found to have subacute bacterial endocarditis, and a mycotic aneurysm was demonstrated on the right posterior cerebral artery at the first major branching on the side of the midbrain. Operation was delayed for 6 weeks in the hope that under antibiotic therapy the arteritis might resolve. Angiography at the end of this period showed that the aneurysm was larger. Under artificial hypotension, both a ligature and clip were used to obliterate the neck. The postoperative angiogram showed complete occlusion of the sac and filling of the distal branches. The subsequent course was uneventful and the patient remains well.

Case 6. This 56-year-old housewife had had two hemorrhages, in 1964 and February, 1966. The second was followed by blurring of vision in the right visual field and impairment of memory. The aneurysm was large, saccular, and arose at the bifurcation of the left posterior cerebral artery. She was well at operation 8 weeks later.

Through a left temporal flap this large aneurysm was exposed by removing the overlying hippocampal gyrus using moderate hypotension (70 mm for 2 hours). The aneurysm was broad enough that a preliminary ligature had to be used to narrow the neck enough so that dissection could be completed. A second ligature was tied down tightly beyond the first and the sac was opened to collapse its bulk. Postoperative angiography revealed that the aneurysm was obliterated and that the peripheral branches filled, though faintly. There was no field defect but the patient was confused and dysphasic for a week. Thereafter improvement was rapid and at the end of 6 weeks she was perfectly well without neurological deficit.

Case 7. This 26-year-old accountant noted the gradual onset of headache 18 days before operation. The CSF was bloody. He probably had had a previous hemorrhage 1 year before. There was a large multicellular aneurysm arising from the right posterior ce-