MULTIPLE INTRACRANIAL ANEURYSMS

ASPECTS OF TREATMENT*

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In its evolution, the surgical treatment of intracranial aneurysms has followed the tradition common in treatment of all arterial hemorrhages; first, ligation of the parent trunk vessels, later "closing in" on the specific bleeding point and, in its final refinement, occluding the bleeding point without interruption of main arterial circulation. In the case of intracranial aneurysms, this meant first, ligation of the common carotid, then ligation of the internal carotid artery, then intracranial exposure of the lesion with local trapping of the trunk and, finally, occlusion of the aneurysmal neck without interruption of flow through the parent trunk.

The attainment of the latter goal permitted widening of our surgical horizons. In 1956 it was stated, "By this method also, one theoretically may separately treat multiple lesions, the numbers of which are significant. To date this has been done only in rare instances; probably many lives could have been saved had it been done in more".

In 1951 Bassett reported treating a carpenter with subarachnoid hemorrhage. An aneurysm of the right middle cerebral artery was clipped across its neck. Another on the supraclinoid carotid could not be so handled, so was trapped with clips on the internal carotid artery. A mild hemiplegia responded to treatment, and the patient recovered and returned to his work as a carpenter.

In 1953 Baker reported the case of a 13-year-old girl having two 3 cm. aneurysms on the right internal carotid artery, one in the carotid canal and one just below the carotid bifurcation. He ligated the internal carotid artery in the neck, and 5 days later, tied the carotid below the bifurcation, trapping the lesions. The child recovered.

Gass and associates reported operating upon 10 patients with middle cerebral aneurysms, in 2 of whom the lesions were multiple. In 1 case 3 middle cerebral aneurysms were obliterated in 3 separate operations. The other patient had aneurysms on the right middle cerebral and the anterior communicating arteries. These were eradicated during the same craniotomy. Both patients survived without neurologic deficit.

Dr. Henry Schwartz kindly gave me the details of a case of multiple aneurysms he treated:

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A 28-year-old man was admitted to another hospital with a subarachnoid hemorrhage and weakness of the left leg. Arteriograms showed evidence of a right-sided aneurysm and preparations were made to ligate the carotid artery. The patient was transferred subsequently to Barnes Hospital (August, 1954). There bilateral angiography showed an aneurysm at the bifurcation of the right middle cerebral artery and another arising posteriorly from the left internal carotid artery.

A right frontal craniotomy was done and an aneurysm was found arising from a lateral branch of the middle cerebral artery. Its neck was clipped. Spinal drainage was used in this operation and fresh blood appeared in the fluid. This was considered presumptive evidence of bleeding from the contralateral aneurysm.

After operation the patient had headache and intermittent left ptosis. Ten days after the first operation, a left frontal craniotomy was done and a large aneurysm was found arising from the posterior surface of the left internal carotid artery. Its neck was clipped and the patient recovered without residual neurologic abnormalities.

It seems reasonable to presume that had the right carotid artery been ligated in the neck, the outcome might have been less favorable.

Several cases have been reported of bilateral symmetrical aneurysms in the cavernous sinuses, but these are in a little different category, since no other treatment than cervical carotid occlusion is available at present.

In 1955 Bigelow5 reported that at the Albany (New York) Hospital, the lesions were multiple in 23 per cent of patients with aneurysms subjected to autopsy. When other diagnostic measures were considered, the rate of multiplicity was 15 per cent in 162 patients. He surveyed 2,237 cases reported in the literature and roughly 10 per cent of the patients had multiple lesions.

Our own series includes 187 patients having saccular aneurysms, in 10 of whom (5.3 per cent) multiple lesions were found. In 90 patients the aneurysms were found at autopsy and in 6 (6.7 per cent) the lesions were multiple. Four instances of multiple lesions were found in 97 patients (4.1 per cent) in whom the diagnosis was made at angiography. In 1 of these patients only one aneurysm was seen on angiography made by injecting the ipsilateral carotid alone. This vessel was ligated and the patient later died of rupture of a second unexpected, contralateral lesion. Two of the patients were not operated upon, for one reason or another. The fourth patient, found to have multiple aneurysms by angiography, was operated upon and furnishes the basis for this report.

CASE REPORT

On Nov. 4, 1957, Mr. R. V., a 44-year-old man, was sitting in a cafe, drinking coffee. He suffered a severe left supraorbital pain, became confused and walked out. Fifteen minutes later he realized he was walking away from his house. He walked back and went to bed with a severe headache. This persisted for 3 days, so he was admitted to a local hospital. On Nov. 11, 1957 bloody spinal fluid was obtained by lumbar puncture. He improved and a week later was allowed up to the bathroom. On Dec. 12, 1957, an angiogram was done, and while the films were not entirely satisfactory, they showed evidence of multiple aneurysms. On Dec. 16, 1957 the patient was transferred to the Buffalo General Hospital.

Examination. He was quite normal neurologically except for a little paraphasia.