ANEURYSMS OF THE VERTEBRAL ARTERY
REPORT OF TWO OPERATIVE CASES*
GÖSTA NORLÉN, M.D., AND SIDNEY N. PALY, M.D.†
Neurosurgical Clinic, Sahlgrenska Sjukhuset, Gothenburg, Sweden
(Received for publication June 29, 1959)

It is now 15 years since Dandy made his much cited reference to aneurysms of the posterior fossa and prognosticated that “in time, cures certainly would come.” A review of the literature of these elapsed years would indicate a slowly growing experience of success in the posterior fossa, beginning with the first case reported by Schwartz, and shortly thereafter another by Steelman et al. Aneurysms of the cerebellar vessels and posterior cerebral artery have been obliterated successfully, but from the paucity of cases reported referring to surgery of the vertebral artery or basilar artery per se, one may infer that the latter remains inviolate and operation on the former is attempted only rarely.

PATHOLOGY
Aneurysms of the posterior fossa represent perhaps 15 per cent of all intracranial aneurysms, those of the vertebral artery alone closer to 5 per cent, although lower figures were reported by McKissock and Walsh. Aneurysms of this vessel may be of 3 general types:

(1) Tortuous aneurysms involving the greater or entire extent of the vessel, caused by arteriosclerotic changes and the most commonly found variety.

(2) Spherical aneurysms.

(3) Small saccular aneurysms similar to those found in the supratentorial circulation and the most common cause of subarachnoid hemorrhage.

The hazards of operating on lesions of the intracranial vertebral artery, as well as their prognostic uncertainty, have hitherto relegated them to the domain of “conservative management.”

With regard to prognostication, Uihlein and Hughes reported the subsequent hemorrhage and death of 8 out of 14 patients with basilar-vertebral aneurysms, previously explored but untreated.

Although Alexander long ago had pointed out the feasibility of vertebral ligation, and Dandy had reported a successful ligation in an unconfirmed case of aneurysm of the vertebral artery, this approach to the problem has been applied only recently. As for the direct, successful attack on such an

---

* This work was supported (in part) by a special traineeship BT-35e from the National Institute of Neurological Diseases and Blindness, Public Health Service.
† Present address: 84 Humphrey Street, Swampscott, Massachusetts.
aneurysm, only a few references were found in the literature. DeSaussure reported 2 cases of trapping of aneurysms of the posterior inferior cerebellar artery. Logue reported on 3 cases of vertebral aneurysms; in 1 the neck of the aneurysm was occluded by clip and in 2 occlusion of the proximal vertebral artery was performed. Contrary to previous reports, Logue noted significant changes in the vertebral artery following proximal clipping. He reported reversal of blood flow, diminution of caliber and pulsation of the aneurysm and distal vessel, and later clinical confirmation by the development of some ischemic signs.

Logue pointed out recently that all is perhaps not quite so black, for the vertebral artery may be visualized via a suboccipital craniectomy, and the basilar artery along its entire course by a transtentorial approach. He also noted that aneurysms of these vessels tend to lie free in the subarachnoid space and hence dissection of brain substance is not necessary technically.

It is with the hope of adding to this small optimistic note that our own experience is presented.

CLINICAL MATERIAL

During the years 1953 through 1958 the Department of Radiology of the Sahlgrenska Hospital has performed vertebral angiography 335 times. It has been a routine procedure at this institution to do bilateral carotid angiograms in cases of subarachnoid hemorrhage and to follow with vertebral studies only if the former reveal no abnormalities. In this group 25 vascular lesions of the posterior fossa were found of which 2 were saccular aneurysms of the vertebral artery. These 2 cases comprise the clinical substance of this paper.

CASE REPORTS

Case 1. E.G., a 57-year-old, right-handed, normotensive housewife, was well until April 1, 1957, when there was gradual onset of persistent headache at the vertex, most pronounced in the evening. In May of that year she noted diminution of hearing of the left ear. On Sept. 23, 1957 she experienced sudden onset of a severe headache radiating from the suboccipital area to the vertex, nausea, vomiting, generalized weakness but no loss of consciousness. Examination at a regional hospital at that time revealed nuchal rigidity. Lumbar puncture yielded grossly bloody cerebrospinal fluid. The headaches gradually subsided but the patient complained of some loss of memory and on October 22 she was transferred to the Sahlgrenska Hospital.

Examination. Pertinent neurological findings were fine nystagmus on lateral gaze to right and left, and absent patellar and Achilles responses on the right. Blood pressure was 120/80. Audiometric studies revealed bilateral impairment of hearing of a primary neurological type. Electroencephalogram showed slight atypical changes over the right hemisphere.

Bilateral carotid angiograms were normal but a left vertebral study revealed a "pea"-sized saccular aneurysm with a broad base originating from the left vertebral artery just distal to the origin of the posterior inferior cerebellar artery (Fig. 1). A right vertebral angiogram was normal.