Nevertheless, the results suggest that occasional elective radical removal of vascular malformations from within or around the cord proper may be the procedure of choice in young persons. Pilcher has already come to this conclusion with respect to similar lesions in the brain.

**SUMMARY**

1. A case of an arteriovenous aneurysm situated within and around the conus medullaris of the spinal cord is described.
2. Surgical removal in toto was carried out in order to prevent spontaneous rupture.
3. Immediate paraplegia followed with a slow return to nearly complete recovery.

**REFERENCES**


**ARTERIAL ANEURYSM OF THE POSTERIOR FOSSA***

HENRY G. SCHWARTZ, M.D.

*Department of Surgery (Division of Neurosurgery) and Institute of Neurology,*  
*Washington University School of Medicine, St. Louis, Missouri*

(Received for publication November 18, 1947)

Pathological reports of aneurysm of the posterior intracranial circulation have been numerous. The majority of the lesions described have been of the fusiform or S-shaped type, occurring in older age groups, and associated with arteriosclerosis. Morgagni's 2 cases were certainly of this type, involving the basilar and both posterior cerebral arteries in one instance, and the basilar at the site of junction of the vertebals in the other.

Large or small sacculated aneurysms, presumably of congenital origin, are less frequently encountered. Cruveilhier's classical illustration of a spherical aneurysm of the right vertebral artery at the point of branching of the posterior inferior cerebellar, appears to be of this type, and fits in with Forbus' theory of the origin of intracranial aneurysms. Lebert described autopsy findings in a case of a large unruptured egg-sized aneurysm of the basilar artery. Sudden onset of deafness and left hemiplegia, culminating in death of a patient, was reported by Van der Byl, who found a small ruptured basilar aneurysm.

Aneurysms of branches of the basilar and vertebral arteries have been described by Bristow, Ogle and Wichern. In one of Wichern's cases, a tiny ruptured aneurysm of the right inferior cerebellar artery was found in a 25-year-old woman, who had had two episodes of bleeding before she died.

In 1932, Wells reported a case of a large sacculated aneurysm of the left vertebral artery, which had given signs referable to the cerebellopontine angle. Guillain, Schmiate and Bertrand* presented at a meeting of the American Academy of Neurological Surgery, Colorado Springs, Colorado, October 10, 1947.
emphasized the difficulty of differential diagnosis between aneurysm of the posterior circulation and tumor of the angle. Certainly it is not surprising that large aneurysmal dilatations in this region are not recognized until operation or autopsy.

Of 21 cases of posterior cranial aneurysm in Dandy's\textsuperscript{3} series, there were 11 S-shaped, sclerotic dilatations of the basilar artery, with the lateral bend coming to rest against the 5th or 8th nerves, resulting in trigeminal neuralgia or Ménière's syndrome. In Dandy's remaining 10 cases, there were 2 large sacculated aneurysms, which were operated upon for suspected posterior fossa tumor, with fatal outcome. Among 5 cases of small sacculations, Dandy described 1 in which death followed rupture of a 5 mm. sac on the posterior inferior cerebellar artery, and pointed out that surgery could have resulted in cure.

In the 1 case in which Dandy shelled out a posterior aneurysm, pressure was so great within the posterior fossa that the patient died. This operation was performed 7 years before his monograph was written, and, as he pointed out, the patient "would almost certainly (survive) in the present status of intracranial surgery." He concluded; "I know of no successful outcome from operative attack upon an aneurysm of the posterior cranial fossa, but for those upon the vertebral and posterior inferior cerebellar arteries, which afford good exposure, cures will certainly come in time."

The following case is presented, in which the history and findings were sufficiently clear-cut to establish a diagnosis before operation, and in which a small aneurysm was found that was amenable to surgery.

**CASE REPORT**

M.V., a 27-year-old housewife, was first seen in consultation on Oct. 3, 1946. During the preceding 3 years, there had been 8 or 9 episodes of sudden onset of occipital and frontal headache, dizziness and generalized weakness. Some of these attacks were sufficiently severe to keep her inactive for as long as 3 to 4 months at a time.

On Aug. 16, 1946, she was aroused from sleep by severe occipital headache, following which there developed staggering gait with a tendency to veer to the left. At first, she ascribed these symptoms to the onset of menstruation. Nausea and vomiting were added to the picture. These symptoms responded, after a week, to saline purgative treatment for "biliousness" and "toxic poisoning." Dizziness improved, but she was unable to walk without support.

Eleven days later, she was again stricken, while taking a nap. She noted a severe "roaring" noise in her head, and numbness of the left upper lip. Within 24 hours, the entire left side of the face became numb; there was partial facial paralysis, and taste was disturbed on the left side of her tongue. She also noted inability to control movements of her left hand. She was seen by an otolaryngologist, Dr. James D. McCloskey, of Alton, Illinois, who found corneal anesthesia on the left, rotary nystagmus, past pointing on the left, and a positive Romberg, with falling to the left. Audiograms revealed 40 per cent loss in the left ear. Caloric tests were inconclusive due to severe spontaneous nystagmus. Examination of the spinal fluid, after admission to a local hospital, was reported as normal, with 4 cells.

**Examination.** When seen by me on Oct. 3, 1946, the patient had severe vertigo and tinnitus. The left cornea was anesthetic and there was hypesthesia over the rest of the trigeminal nerve distribution. There was marked nystagmus, particularly on left lateral gaze. Hearing was grossly diminished on the left. There was bilateral ataxia, greater on the left than the right. Examination of the eye grounds showed slight hyperaemia on the right.

The patient was treated with complete bed rest, and was transferred to Barnes Hospital on Oct. 13, 1946. While awaiting transfer, there was steady improvement in her condition, so that there were few residual signs. Except for hypesthesia of the left corner of the mouth, trigeminal sensation was now intact. Nystagmus was present in moderate degree. Audiograms revealed normal hearing on the right, with 20–30 units of hearing loss on the left. Caloric tests showed directional preponderance to the left. On lumbar puncture, spinal fluid pressure was 50 mm. of water. Fluid was colorless. It contained 360 red blood cells, most of which were crenated, and 43 lymphocytes. Total protein was 49 mg. per cent. Colloidal gold curve was 2222210000. Serology was negative. Roentgenograms of the skull were negative.
Fig. 1. A, Diagram of the “normal” posterior intracranial circulation. B, C, D, E, F, Variations from “normal,” noted in dissections of routine autopsy material.
A presumptive diagnosis of an aneurysm of the posterior fossa, involving the left cerebellar pontine angle, was made. With the long history of apparently repeated attacks of hemorrhage, culminating in the recent severe episode, in a young woman obliged to be active, surgery was advised. Operation was delayed for 2½ weeks, however, because the patient developed a severe upper respiratory infection. During this interval, all signs and symptoms disappeared except for slight inconstant nystagmus on looking to the right.

Operation. On Nov. 6, 1946, with the patient on her side, left suboccipital craniotomy was performed through a longitudinal incision. The dura overlying the left cerebellar hemisphere was opened and the cisterna magna was punctured. The cerebellar hemisphere fell away, allowing excellent exposure of the angle and brain stem. The lateral cisterna was then opened, and the 5th, 6th, 9th, 10th and 11th nerves were readily visualized. A large petrosal vein was seen and protected. The posterior inferior cerebellar artery was found to pass between the 9th and 10th nerves in its course to the medulla and cerebellum. Except for its course through this nerve group it appeared normal. The area of the brain stem between the 5th and 8th nerves was explored. Here, lying against the pons and pursuing a course from the neighborhood of the proximal origin of the internal auditory artery, toward the trigeminal root, was an artery which was obviously abnormal. In the middle of its longitudinal course at this level there was a saccular dilatation, lying in a mass of yellow fibrous tissue. After tearing away a little of this tissue, it was possible to free the ragged medial edge of this small aneurysm, which was about 4 mm. in diameter. Rostrally, beyond the end of the swelling, the artery was very tenuous. Caudally, as it ran into the area of dilatation, the artery was of fairly good size. An attempt was made to determine the exact origin of the involved artery. It was visualized until it curved ventral to the 8th nerve. At this point it was close to the internal auditory artery, but whether it arose from the basilar separately or in conjunction with the auditory artery could not be determined. As the shaggy wall of the aneurysm was dissected free from its attachment to the pons, brisk bleeding occurred. This was controlled by packing until it could be trapped by placing a silver clip proximally at a point just ventral to the 8th nerve; another clip was applied distally to the thinned-out portion just caudal to the 5th nerve entry zone. The intervening segment, with the aneurysm, was not excised for fear of dislodging the proximal clip which lay beneath the 8th nerve. If this were to have occurred after sectioning the artery, it would have been difficult to stop bleeding from the retracted proximal end without doing damage to the brain stem or 8th nerve. Instead the proximal loop was lifted away from the brain stem and coagulated.

Postoperative course was uncomplicated, and by the 9th day, what nystagmus had been present disappeared. Caloric tests were repeated on the 13th day, which were reported as normal. Subjective diminution in hearing had disappeared, and no objective disturbance could be demonstrated. She was discharged on Nov. 19, 1946, 13 days after operation, with normal neurological findings, and completely free of symptoms. The patient has returned for checkup examinations frequently. She has remained symptom- and sign-free consistently for 11 months after operation and is able to perform her ordinary household duties.

ANATOMICAL VARIATIONS OF THE POSTERIOR CIRCULATION

I regret that I am unable to name the artery involved and give its exact source of origin. Its course, running longitudinally along the pons, is not in keeping with the usual pattern of pontine rami of the basilar artery.

Just as in the circle of Willis, the vascular pattern of the posterior cerebral circulation is subject to considerable variation. In our own dissections of the blood vessels at the base of the brain in 20 routine autopsies, we have found no less than 6 deviations from the "normal" (Fig. 1).

SUMMARY

A case is presented in which a preoperative diagnosis of ruptured arterial aneurysm of the posterior cranial fossa was made. At operation a small saccular arterial aneurysm of a
branch of the posterior intracranial circulation was found and trapped, with successful outcome.

Variations from the "normal" arterial tree in this region are described.

REFERENCES

7. Morgagni, J. B. De sedibus et causis morborum per anatomiam indagatis libri quinque. Embrun, Switzerland, 1769, lib. 1, epist. 4, 9.
8. Ogil, J. W. Case of paralysis... being the result of compression of certain lateral parts of the brain from an intra-cranial aneurism. Med.-chir. Trans., 1859, 49: 408-422.

UNUSUAL CASE OF MENINGOCELE IN AN ADULT

John W. Chambers, M.D., and Antonio G. Revilla, M.D.

Department of Surgery (Neurosurgery), Johns Hopkins Hospital, Baltimore, Maryland

(Received for publication November 25, 1947)

Cases of meningocele with increase in the size of the protrusion and progressive neurological changes beginning in adult life must be very uncommon. No similar case appears in the records of the Johns Hopkins Hospital and a review of the literature failed to reveal any case quite similar to this one, which was therefore felt to be worth reporting.

CASE REPORT

History #873455. C.W.S., a white married male, aged 53, was admitted to the Brady Urological Institute Jan. 16, 1946, with the chief complaints of difficulty in urination and progressive weakness of the lower extremities of about 17 years' duration.

Family history did not reveal any congenital abnormalities. His father died of heart trouble and his mother of unknown cause. There were 3 siblings; 2 living and well and 1 dead at 55 years from cerebral hemorrhage.

Present Illness. Ever since birth the patient had had a small, nodular protrusion with the shape of a small rudimentary tail in the lumbosacral region, which did not show any increase in size throughout his development until the age of 32, when it began to gradually enlarge. Originally this protrusion caused no symptoms and was not tender but as the patient approached early manhood it became apparent that pressure over this area produced a headache and also pains in the lower extremities. At the age of 32, when there was first noted some increase in the size of the protrusion, there was also increased tenderness in this region, accompanied by very slowly progressive weakness in the lower extremities with pain and para-