ARteriovenous Aneurysm of the Posterior Fossa in an Infant

Report of a Case

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Vascular malformations of the posterior fossa in infants are extremely rare. Dandy3 reported an infant of 1 month with an angiooma of the posterior fossa with extracranial and intracranial extension and development of hydrocephalus who subsequently died on attempted removal of the tumor. Richardson and Bagnall8 described a case of angiooma of the posterior fossa in a male 23 years of age whose symptoms were first noted at the age of 7 years. The patient died at the age of 23 years, and at autopsy an angiomatous malformation of the posterior fossa was found. Grotts4 reported a 2-year-old child, who died from a spontaneous hemorrhage, with a cavernous hemangiooma of the pons found at autopsy. Olivecrona and Riives6 reported 60 cases of arteriovenous aneurysms out of 3206 verified tumors of the brain. Of these 60 aneurysms, only 2 were in the posterior fossa, and these 2 were in males aged 39 and 50 years. Clement et al.1 reported 2 cases of arteriovenous aneurysms in infants aged 5 weeks and 8 months. The first case was that of an infant who died at the age of 5 weeks; autopsy revealed an ovoid aneurysmal dilatation at the junction of the free edge of the falx cerebri with the tentorium cerebelli. The second quad had dilatation of the right sinus rectus, torcular Herophili, and lateral sinus as well as an arteriovenous aneurysm of the ampulla of Galen. These were proved by angiography. The findings were verified at autopsy.

The following case report is of a 2-month-old white male infant who had a spontaneous subarachnoid hemorrhage from an arteriovenous aneurysm of the posterior fossa which was diagnosed by vertebral angiography and successfully removed.

Case Report

JG #174594. A 2-month-old white male infant was admitted to the Baptist Memorial Hospital on Nov. 18, 1954. He was referred to this hospital by Dr. J. N. Robinson, Columbus, Miss., and Dr. J. R. Mullens, Jr., West Point, Miss. The infant was a full-term fetus delivered under general anesthesia with no complications. He was apparently normal until 3 weeks before admission when he was said to have had a convulsion with loss of consciousness. He was taken to Dr. Mullens, who referred the child to Dr. Robinson. A spinal puncture yielded xanthochromic fluid. The examination prior to this time had shown that the anterior fontanelle was tense and bulging. A pneumoencephalogram was performed by Dr. Robinson which showed slight ventricular enlargement and absence of air over the cerebral hemispheres.

Examination. The head was obviously enlarged. The occipitofrontal circumference of the skull measured 41 cm.; the anterior fontanelle was large and bulging. Lumbar puncture revealed slightly xanthochromic spinal fluid with 164 mg. per cent of total protein. Ventricular fluid was colorless.

Ventriculography revealed the lateral and 3rd ventricles to be symmetrically enlarged.

with no filling of the 4th ventricle or the aqueduct of Sylvius. The enlargement of the ventricles was noted to be greater than on the previous encephalogram. Two days following this pneumoencephalography was performed with 50 cc. of air to demonstrate the patency of the 4th ventricle and aqueduct. The lateral ventricles were well filled, as was the 3rd ventricle. Views of the 4th ventricle and aqueduct were not completely satisfactory. There was very little air over the surface of the cerebral cortex.

Course. The child was discharged Nov. 26, 1954 with a diagnosis of hydrocephalus, most probably caused by failure of the subarachnoid channels to develop properly. The parents were instructed that pneumoencephalography was to be repeated in 1 month.

Readmission. The child was readmitted on Jan. 3, 1955 because of rapid enlargement of the head from 42 cm. to 47 cm. No other significant abnormality had been detected. Pneumoencephalography was repeated. This study revealed an obstruction in the 4th ventricle and poor filling of the lateral and 3rd ventricles. Air in the 4th ventricle seemed to outline a mass.

1st Operation. On Jan. 11, 1955 a suboccipital craniectomy was performed through a midline incision. Upon opening the dura mater, a smooth, white, glistening mass presented itself in the midline, approximately 3 cm. in diameter. A 25 gauge needle was inserted into the mass and arterial blood was obtained. Palpation of the mass then revealed an obvious pulsation and it was immediately apparent that a vascular malformation was present. Because of the limited exposure plus the fact that the origin of the vascular malformation was unknown, no definitive procedure was done and the operation was terminated.

Course. On Jan. 17, 1955 left vertebral angiography was performed with 35 per cent Diodrast. A large, midline aneurysmal sac was noted in the posterior fossa as had been seen at surgery (Fig. 1). It was thought that the feeding vessel was the left vertebral artery with drainage into the straight sinus.

2nd Operation. On Jan. 25, 1955 a suboccipital craniectomy was performed through a horseshoe-shaped incision. The aneurysmal mass was satisfactorily exposed. It was noted that the left vertebral artery divided before entering the large aneurysmal sac. Each division was clipped with an Olivecrona type of clip. No ill effects were noted and the aneurysm ceased to pulsate; however, this was only temporary and the aneurysm again started to pulsate in a few moments. The entire left cerebellar hemisphere was cystic and degenerative in nature, and the major portion of it was occupied by a huge angiomatosus mass. The angiomatosus mass together with the large aneurysm was dissected free and carefully divided from its vascular attachments. It was thus removed en bloc. After the removal, very little tissue remained of the left cerebellar hemisphere.

Course. The infant tolerated the procedure quite well. When discharged from the hospital his fontanelle had remained soft as well as the site of operation.

![Fig. 1. Vertebral angiogram. (Left) Anteroposterior view showing the aneurysm filling from the left vertebral artery. (Right) Lateral view showing the aneurysm in the posterior fossa.](image-url)