Intracranial aneurysm in infancy

Case report

ROBERT J. MORELLI, M.D., AND FREDERICK LAUBSCHER, M.D.

Section of Neurosurgery and Department of Pathology, Washoe Medical Center, Reno, Nevada

Angiography demonstrated an aneurysm of the left anterior cerebral artery in a 4-month-old baby who was admitted for subarachnoid hemorrhage. A surgical cure with long-term follow-up course was achieved. Clinical and pathogenetic aspects are presented. The rarity of such lesions in childhood and their successful surgical treatment are discussed briefly.

KEY WORDS • aneurysm • intracranial • infancy

Intracranial aneurysms in infancy are rare. Only one case has been reported in which the patient was under 1 year old. We are reporting a second such patient.

Case Report

A 4-month-old baby boy was brought to the emergency room with signs of lethargy, nausea, vomiting, and meningismus. The infant had been a product of a normal gestation and birth, and had developed normally up to that time.

Examination. In the initial work-up, bacterial meningitis was suspected as the probable etiology of his illness. Accordingly, a lumbar puncture was performed. The pediatrician reported that gross blood was obtained and thought a traumatic tap was responsible. The bloody cerebrospinal fluid (CSF) was analyzed bacteriologically; no organisms were demonstrated on smear and none grew on culture. Over the next few days the patient’s status remained essentially unchanged. The fontanels were tense but not bulging. Bilateral subdural taps failed to demonstrate any subdural blood. The lumbar puncture was repeated and the CSF remained blood-tinged and xanthochromic. The specimens were cultured and examined microscopically, again with negative results. Cerebral angiography via the femoral route revealed an aneurysm arising from the left anterior cerebral circulation, presumably from the region of the bifurcation of the anterior cerebral into the callosomarginal and the pericallosal vessels or from a branch thereof. The remainder of the cerebral angiogram was normal (Fig. 1). There was no evidence of other congenital anomaly, such as aortic stenosis or polycistic kidneys.

Operation. On January 6, 1975, a left frontal osteoplastic craniotomy was carried out. A small hematoma was encountered in the interhemispheric fissure, estimated to be 5 to 8 cc in volume. With the removal of the hematoma, the aneurysm was identified. It appeared to be multilobulated and arose on a
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FIG. 1. Anteroposterior (left) and left lateral (right) angiograms of the aneurysm of the left anterior cerebral circulation.

pedicle from a branch of the anterior cerebral system at the level of the genu of the corpus callosum. The neck was clipped and the aneurysm resected and submitted for pathological analysis (Fig. 2).

Pathological Examination. The excised specimen was a $1.2 \times 1.0 \times 0.8$ cm gray-red aneurysmal structure with a partly bosselated surface contour and a 0.2-cm pedicle toward one end. Sections demonstrated marked thinning of the aneurysmal wall with areas of recent hemorrhage within the wall and within the minute amount of attached leptomeningeal tissue. The lumen of the aneurysm was partly filled with recent clot.

Postoperative Course. The postoperative course was uneventful except for some difficulty with persistent vomiting for the first 2 weeks without evidence of communicating hydrocephalus. Thereafter, hydration and nutritional status were easily maintained. Within 1 month postoperatively, the child's position on the growth and development curves for age and sex had been regained. Follow-up examinations have resulted in no further evidence of congenital anomaly, no evidence of neurological deficit, and no surgical complications.

Discussion

The rarity of intracranial aneurysms in infancy is documented by all observers in the field. Matson reports intracranial aneurysms in only 15 children, the youngest was aged 1 1/3 years of age. In a series reported before 1938, when angiographic investiga-

FIG. 2. Photograph of the resected aneurysm shows a multilobular configuration arising from a single vessel neck.
tion was not generally available, McDonald and Korb\textsuperscript{9} reported one instance in a youngster aged 1 1/2 years and two others in children under 5 years of age. This series represented an analysis of some 1125 aneurysmal lesions. Jones and Sherburn\textsuperscript{6} reported successful surgical correction of an intracranial middle cerebral aneurysm in an infant only 4 weeks of age. A number of other reports of aneurysms in children are available. Most were incidental or autopsy findings and the ages of these are not under 1 year.\textsuperscript{1,4,5,7,10,12} Thompson, \textit{et al.},\textsuperscript{13} reported more recently on a series of aneurysms in 22 children. These included mycotic, traumatic, and congenital lesions. The latter included the case of a 9-month-old baby girl, the only case under 1 year of age. The present case appears to be the second recorded patient aged under 1 year and another successful surgical treatment.

The lesion in our patient was clearly arterial in nature as evidenced by the amount of elastic fibers in its wall. This fact essentially ruled out the possibility that the lesion represented an arteriovenous malformation and is in keeping with the angiographic appearance. Whether this aneurysm arose from a defect of the media at a bifurcation is uncertain.\textsuperscript{9} It is felt that in all probability this particular aneurysm and similar lesions in infants and children result from dysplasia of arterial formation during embryogenesis and the location appears to be entirely fortuitous. A review of Padget's scholarly treatise\textsuperscript{11} on the development of cranial arteries in the human embryo offered no additional insight in this particular problem.

References


Address reprint requests to: Robert J. Morelli, M.D., 175 West 6th Street, Suite 21, Reno, Nevada 89503.