

Coiling Is Effective for Pediatric Brain Aneurysms

Other treatments that have stood the test of time are clipping, embolization, and/or surgery.

BY AMY ROTHMAN SCHONFELD
Contributing Writer

DANA POINT CALIF. — Aneurysms that develop in children differ in distribution and etiology, compared with those in adults, but they can often be treated effectively, safely, and durably by surgery, embolization, or combination therapy, according to Dr. Steven Hetts, who presented his findings at the American Society of Interventional and Therapeutic Neuroradiology annual meeting.

Aneurysms occur rarely in children, with only 2%-5% of all aneurysms found in people age 19 years or younger. Nevertheless, when an aneurysm is discovered in a child, clinicians are faced with questions such as what is the risk of aneurysm rupture, whether to treat, and what treatment options are best.

By examining retrospective and prospective medical records, MRIs, and intracranial angiograms, Dr. Hetts was able to collect data on 75 children with 101 aneurysms who had been treated at the University of California, San Francisco, School of Medicine between 1981 and 2006. The children ranged in age from 3 months to 18 years, and the mean follow-up time was 45 months.

Headache, the most common symptom at presentation, was reported by 34 of the children.

Other symptoms include cranial neuropathy (12), nausea and vomiting (11), changes in vision (10), trauma (9), seizures

(3,) and pulsatile tinnitus (1). Five children were asymptomatic. Twenty-four children presented with subarachnoid hemorrhage (SAH).

When Dr. Hetts analyzed aneurysm morphology, he found that 46% of the 101 aneurysms were saccular and 31% were fusiform. Twelve percent of the aneurysms were associated with infection, and 14% were thought to have a traumatic etiology. The mean maximal diameter was 12 mm and 11% were considered to be "giant" (greater than 25 mm) aneurysms. Sixteen percent of patients had multiple aneurysms.

In this sample, one child died, indicating 1.3% mortality. Four of 75 children (5%) manifested a new infarction and 1 in 75 children (1.3%) developed new-onset seizures. Twenty-four aneurysms ruptured, according to Dr. Hetts.

In the sample, saccular lesions were associated with a higher risk of rupture: 19 of the 46 saccular aneurysms ruptured, compared with only 2 of the 12 infectious and 3 of the 31 fusiform aneurysms. None of the traumatic aneurysms presented with hemorrhage.

"This may be because UCSF is not a regional trauma center, and the patients may not have survived before reaching us," explained Dr. Hetts.

Of the 75 children, 17 patients were managed conservatively with close follow-up and serial imaging for an average observation time of 41 months.

The mean aneurysm size was 6 mm.

These patients tended to have long segment vascular dysplasia involving multiple territories.

None of the patients required treatment, none of the aneurysms bled, and two patients showed minimal aneurysm enlargement.

Other patients underwent surgery, embolization, or combination therapy. Nineteen patients had their aneurysms surgically clipped (mean size 12 mm, mean age 12 years).

Thirteen of these patients had presented with SAH. After clipping, two patients required retreatment (with coiling). Complications of clipping included one ventriculitis, one proximal clip occlusion, one symptomatic infarct, and one brainstem infarct.

Nineteen other patients were treated with endovascular coiling (mean size 14 mm, mean age 10 years). Six had SAH, and four required retreatment. Complications included one rupture with infarct and one de novo hemorrhage in a patient with AIDS.

Thirteen patients underwent carotid occlusion (mean size 26 mm, mean age 14 years). Of these, one patient had SAH, and two required retreatment because of development of new aneurysms.

The charts contained no reports of major complications, and one new vertebral aneurysm was assigned to observation.

A fourth group of 10 patients had bypass/trapping of their aneurysms (mean

size 12 mm, mean age 12 years). In this group, three patients had SAH, and two required retreatment. The complication rate was low, with ventriculitis reported in one patient and a new seizure disorder in another.

Dr. Hetts described the case of a 12-year-old boy who presented with acute onset of double vision.

A head CT revealed a giant aneurysm adjacent to and impressing upon his right cerebral peduncle and he was admitted to the hospital. A catheter angiogram demonstrated a fusiform partly throm-

bosed aneurysm of the right posterior cerebral artery, which at the same session was treated successfully with endovascular coiling.

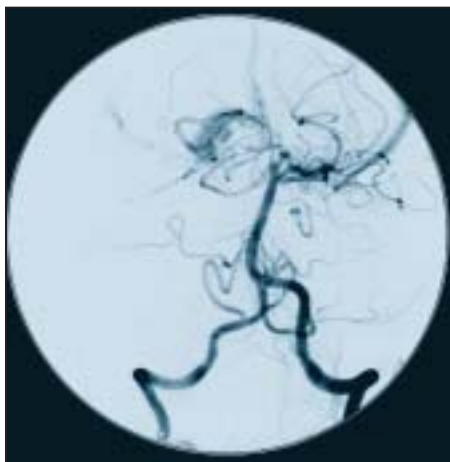
The patient did well postprocedurally and was discharged home on hospital day

3 with improving double vision. "Aneurysms in children can be considered as a chronic disease.

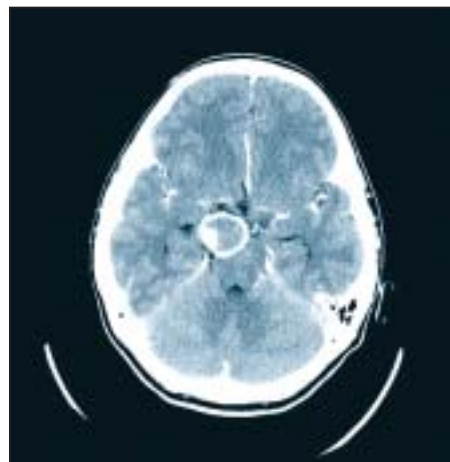
"They should be carefully monitored, with the recognition that new aneurysms can arise," said Dr. Hetts.

"Given that most aneurysms can be successfully treated with minimally invasive endovascular coiling or with surgery, we recommend that children with aneurysms be evaluated at centers with multidisciplinary collaborative teams of neurologists, neurosurgeons, and interventional neuroradiologists where a comprehensive plan for management can be formulated and carried out," he said. ■

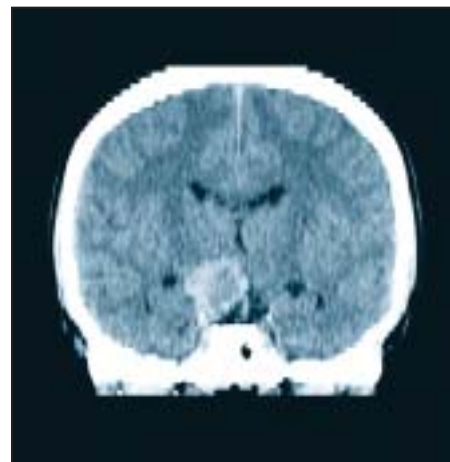
Seventeen children were managed conservatively with serial imaging and close follow-up. None of their aneurysms ruptured and only two enlarged.



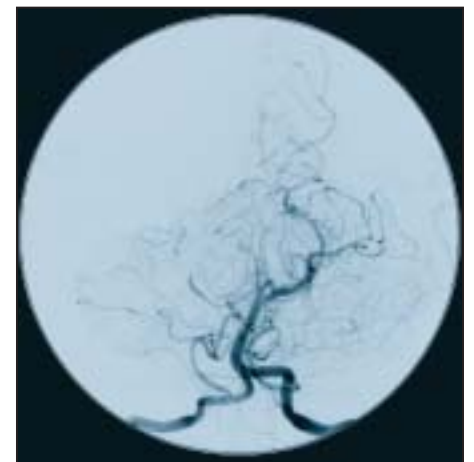
Angiography shows an untreated giant aneurysm in a 12-year-old child.



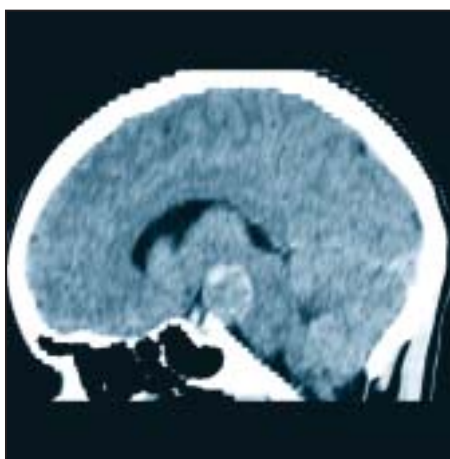
The same untreated lesion is shown in axial contrast computed tomography.



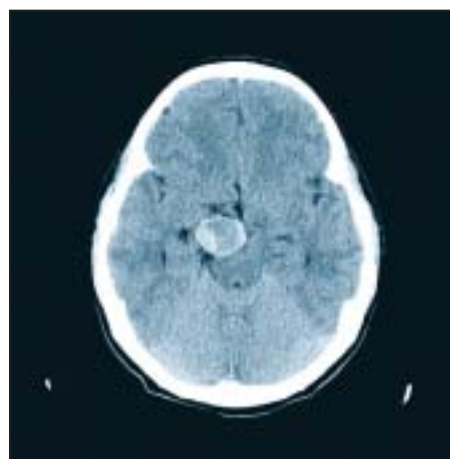
Coronal computed tomography shows the same untreated giant aneurysm.



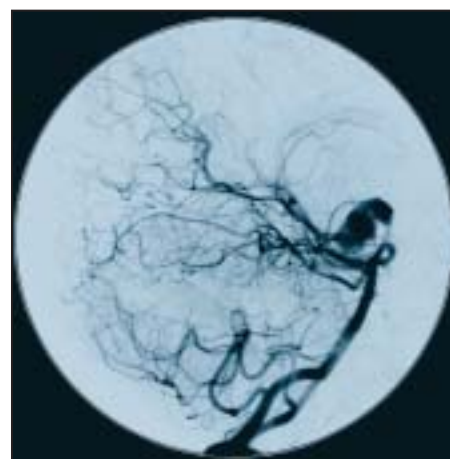
Angiography shows resolution of the aneurysm after treatment with coiling.



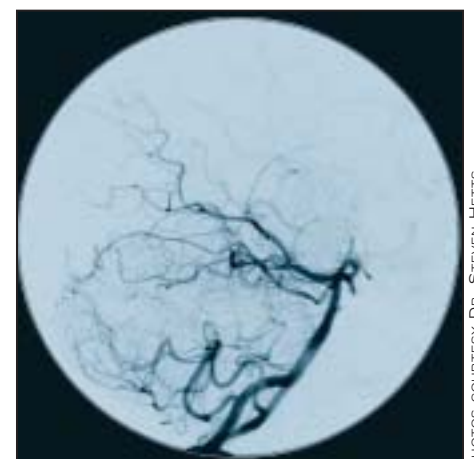
A pretreatment sagittal noncontrast CT scan shows the same child.



An axial contrast computed tomography shows the child, pretreatment.



Lateral angiograph of the child shows a vertebral artery injection, precoiling.



Lateral angiograph of the child shows a vertebral artery injection after coiling.