

## Cerebral Berry Aneurysms in Identical Twins: A Case Report

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**A pair of identical twins in whom cerebral berry aneurysms were found is reported. One presented with epilepsy, and the aneurysm was discovered incidentally. The other presented with a spontaneous bleed, which was fatal.**

**KEY WORDS:** Aneurysms; Epilepsy; Subarachnoid hemorrhage; Cerebral angiography

The familial occurrence of cerebral berry aneurysms is well documented in the literature [2,3,9,12]. The incidence of this phenomenon in the general population is unknown. It is presumed that genetic factors and heredity may play a part in the etiology. Aneurysms occurring in identical twins are rare, and a careful search of the literature revealed only four such case reports. We will add another pair to this unique collection and discuss its implications regarding management.

### Case Reports

A 36-year-old woman was admitted to the Royal Preston Hospital in May 1989 with an 8-year history of typical temporal lobe epilepsy and one generalized seizure. Neurological examination was entirely normal. Computed tomography (CT) and magnetic resonance imaging (MRI) brain scans were normal. Cerebral angiography revealed a 6-7-mm aneurysm at the bifurcation of the left middle cerebral artery (Figure 1) and a slightly smaller aneurysm at the origin of the left posterior inferior cerebellar artery (Figure 2). In March 1990, she underwent a craniotomy for clipping of the left middle cerebral artery aneurysm. In May 1990, she underwent an operation for clipping of the left posterior inferior cerebellar artery aneurysm.

Her identical twin sister (aged 37 years) was admitted to the hospital in April 1990 following an acute onset of headache, vomiting, right-sided focal convulsions, and rapid deterioration of level of consciousness. Her pupils were dilated and fixed, the right being larger. The CT scan of the brain revealed a large right frontotemporal hematoma with mass effect. She was intubated and kept on hyperventilation therapy. In the next hour, she lost

**Figure 1.** Left carotid angiogram showing an aneurysm of left middle cerebral artery (arrows).



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Figure 2. Vertebral angiogram showing an aneurysm arising from the left posterior inferior cerebellar artery (arrows).

her brain-stem reflexes and died on the following day. An autopsy revealed a large right frontotemporal hematoma. In addition, there was a 1-cm-diameter berry aneurysm arising from the origin of the right middle cerebral artery that showed signs of rupture.

### Discussion

After reviewing the literature, we could find only four pairs of identical twins with cerebral berry aneurysms. The age at presentation in each pair was similar, the difference ranging from 2 to 8 years. We compared the age at presentation in familial intracranial aneurysms with the aneurysms in identical twins and found that the familial aneurysms usually present at a younger age (the 3rd, 4th, and 5th decades), compared with the general population with cerebral aneurysms [2,7,8]. Identical

twins with aneurysms also presented in the 3rd, 4th, and 5th decades of life [4,5,10,11]. One of our identical twins with cerebral aneurysm presented with hemorrhage in the 4th decade of life. Andrews et al [1] found that the incidence of intracranial aneurysms occurring at identical sites in siblings was over twice the expected frequency in the general population. Fox [6] analyzed various documented cases with familial intracranial aneurysms and found that of 38 pairs of siblings there were 15 pairs in whom at least one aneurysm was situated in the ipsilateral vessel; identical aneurysms on opposite sides were seen in 26 of 40 sibling pairs. The identical twins (Table 1) reported have also shown aneurysms on the same site in one pair. The twins reported by Fairburn [5] showed identical aneurysms on the same artery but on opposite sides. We found aneurysms in the left and right middle cerebral artery. These four previously re-

Table 1. Summary of Information in Five Sets of Twins with Cerebral Berry Aneurysms

Source	Age at Diagnosis, yr	Presentation	Aneurysm Site
O'Brien [10]	26	SAH	Not known
	34	SAH	L MCA
Fairburn [5]	44	SAH	R ICA
	46	SAH	L ICA
Brisman & Abbcissioum [4]	30	SAH	L and R MCA
	35	SAH	R and L ICA
Schon & Marshall [11]	39	SAH	ACA
	43	SAH	ACA
Present report	36	Epilepsy	L MCA and L PICA
	37	SAH	R MCA

Abbreviations: SAH, subarachnoid hemorrhage; L, left; MCA, middle cerebral artery; R, right; ICA, internal carotid artery; ACA, anterior communicating artery; PICA, posterior inferior cerebellar artery.

ported identical twins presented with subarachnoid hemorrhage [4,5,10,11]. In our cases of identical twins, the first patient had an incidental aneurysm found on investigation for epilepsy, while the other presented with spontaneous intracerebral bleed.

After reviewing these four reported twins and our cases, we recommend that elective cerebral angiography be carried out on the asymptomatic twin when the other is discovered to have an aneurysm or has an intracranial bleed. Because aneurysm surgery has become much safer with the advent of microneurosurgical techniques, prophylactic surgery can be offered for an incidentally found aneurysm.

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## References

1. Andrews RJ. Intracranial aneurysms. Characteristics of aneurysms in siblings. *N Engl J Med* 1977;297:115.
2. Bannerman RM, Ingall GB. The familial incidence of intracranial aneurysms. *Neurology* 1970;20:283-92.
3. Beauman PJV. The familial occurrence of berry aneurysms. *J Neurol Neurosurg Psychiatry* 1968;31:399-402.
4. Brisman R, Abbcissioum K. Familial intracranial aneurysms. *J Neurosurg* 1971;34:678-82.
5. Fairburn B. "Twin" intracranial aneurysms causing subarachnoid haemorrhage in identical twins. *BMJ* 1973;2:10-1.
6. Fox TL. Associated conditions, familial aneurysms. In: *Intracranial aneurysms*, vol 1. 1983:410-1.
7. Fox FL, Jehen PK. Familial intracranial aneurysms. *J Neurosurg* 1980;53:501-3.
8. Hashimoto I. Familial intracranial aneurysms and cerebrovascular anomalies. *J Neurosurg* 1977;46:419-22.
9. Kak VK, Gleadhil CA, Bailey I. The familial incidence of intracranial aneurysms. *J Neurol, Neurosurg Psychiatry* 1970;33:29-33.
10. O'Brien JG. Subarachnoid haemorrhage in identical twins. *BMJ* 1942;1:602-8.
11. Schon F, Marshall J. Subarachnoid haemorrhage in identical twins. *J Neurol Neurosurg Psychiatry* 1984;47:81-3.
12. Starnow L. Familial occurrence of intracranial aneurysms. *Acta Med Scand* 1979;206:197-200.