Cerebral Hemorrhage from a Mycotic Aneurysm Developing During Appropriate Antibiotic Therapy

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SUMMARY A patient with bacterial endocarditis had headaches, cerebrospinal fluid pleocytosis and normal cerebral angiograms. Fifteen days later, while on appropriate antibiotic therapy, he developed an intracerebral hematoma due to a mycotic aneurysm. Mycotic aneurysms are an infrequent but serious complication of bacterial endocarditis. An aneurysm should be considered whenever a patient with bacterial endocarditis has neurologic symptoms even when the patient is receiving antibiotics.

CEREBRAL MYCOTIC ANEURYSM occurs in 5–10% of patients with bacterial endocarditis.1–3 Like the other neurological complications of this disease, it may be the presenting feature of the illness.4,5 Frequently, the patient has no neurologic symptoms until the aneurysm ruptures. We report a patient in whom a mycotic aneurysm developed late in the course of subacute bacterial endocarditis despite appropriate antibiotic therapy.

A 41-year-old man was admitted because of a 3 month history of fever, malaise, arthralgias and skin rash. He had a rectal temperature of 38.5°C, a systolic murmur, and splenomegaly. Cefazolin sodium and gentamicin sulfate were administered to treat the presumed bacterial endocarditis. Blood cultures subsequently grew gram-positive cocci, later identified as having characteristics of both streptococcus viridans and enterococcus. The cefazolin was discontinued and penicillin, 12 million units per day, was begun on the 3rd hospital day. A neurology consultant saw the patient because of a mild, diffuse headache. Neurological examination results were normal. Lumbar puncture on the 12th hospital day yielded clear, colorless cerebrospinal fluid (CSF) under a pressure of 220 mm CSF. The CSF contained 156 red blood cells (RBC), 143 white blood cells (WBC), 84% mononuclears. The protein was 39 mg % and glucose, 36 mg %. Serum glucose was 107 mg %. Right and left carotid and left vertebral angiograms were normal.

An intracerebral hematoma due to a mycotic aneurysm. Mycotic aneurysms have been produced in dogs by embolization of cerebral vessels using bacteria-coated particles.6 Without prompt consideration of surgery to prevent rupture of the artery some time after the first angiogram. A repeat study assumed that the aneurysm formed before therapy or early in its course, and became symptomatic when it ruptured.

Mycotic aneurysms are an infrequent but serious complication of bacterial endocarditis. However, the incidence of neurological complications has not been significantly reduced.3,7 The development of a cerebral mycotic aneurysm is presumed to begin with a septic embolus that lodges in a cerebral artery. Then local infection weakens the arterial wall and an aneurysm develops.6 Experimentally, mycotic aneurysms have been produced in dogs by embolization of cerebral vessels using bacteria-coated particles. Without treatment those aneurysms developed and ruptured within four days of the embolus. Treatment with an antibiotic to which the organism was sensitive did not prevent development of an aneurysm but prevented early rupture.

The aneurysm in our patient developed between the 16th and 31st days of antibiotic therapy. The early headache and spinal fluid abnormalities indicated an active central nervous system process but no aneurysm was found on the arteriogram. We presume the patient had a clinically silent septic embolus to a branch of the right middle cerebral artery some time after the first angiogram. A repeat study probably would have shown the aneurysm and would have prompted consideration of surgery to prevent rupture of the...
vessel. Repeat angiography was not done because the patient’s neurological symptoms abated and the general symptoms and signs of endocarditis improved. The antibiotic therapy did not prevent the formation of the aneurysm but may have retarded its development and rupture.

This case emphasizes that physicians should consider a mycotic aneurysm in a patient with bacterial endocarditis, even when the patient is on antibiotics and has minimal neurologic symptoms. It also raises the issue of how vigorously the diagnosis of mycotic aneurysm should be pursued, especially in the relatively asymptomatic patient.

References

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