Mycotic Aneurysms of the Aorta Caused by Infection with Pasteurella multocida

We evaluated a patient for mycotic aneurysms caused by Pasteurella multocida. We treated Pasteurella aortitis medically with ciprofloxacin, and the patient has had long-term survival.

Infectious aortitis is a severe complication of bacteremic infections. Pasteurella multocida very rarely infects vessels. In the present report, we describe what we believe to be the first case of long-term survival following the treatment of Pasteurella aortitis without surgery.

In January 1997, a 54-year-old man complaining of acute malaise, fever, chills, and mental confusion was admitted to our hospital. His medical history included Laennec’s cirrhosis and psoriasis inversa. Clinical examination revealed lethargy, fever (temperature, 39.7°C), hypotension (blood pressure, 95/55 mm Hg), tachycardia (pulse, 130/min), a grade 3/6 holosystolic murmur, hepatosplenomegaly, petechiae, and icterus; inflamed psoriatic lesions covered the palms, soles, and genitalia.

Laboratory investigations revealed the following values: hemoglobin, 10.8 g/dL; WBC count, 3900 cells/mm³ with a left shift; platelet count, 15,000 cells/mm³; sedimentation rate, 50 mm/h; C-reactive protein, 63 mg/L; prothrombin, 1.73 (international normalized ratio); total bilirubin, 168 µmol/L; aspartate aminotransferase, 94 U/L; albumin, 20 g/L; and ammonia, 73 pmol/L (normal, <40 pmol/L). Other laboratory values were in the normal range. A chest radiograph showed cardiomegaly without inflammatory infiltrates. Abdominal sonography revealed hepatosplenomegaly and little ascites.

The patient was treated empirically with iv amoxicillin/clavulanate, 8 g/day of each, and gentamicin, 320 mg/day. Gram-negative coccobacilli grew in 4 blood cultures; the bacteria were identified as P. multocida. The organism showed great susceptibility to all common antibiotics. A transthoracic echocardiogram showed dilated cardiomyopathy and moderate mitral-valve regurgitation. A second transthoracic echocardiogram showed a reduction of the left ventricular enlargement and of the mitral-valve regurgitation. Technetium-99m diphosphonate bone scans did not reveal vertebral osteomyelitis. A contrast-enhanced abdominal CT scan showed a periaortic nodularity at the level of L1 (figure 1), and MRI revealed 3 mycotic aneurysms of the descending thoracic and abdominal aorta that had a diameter <3 cm (figure 2).

The patient was given iv amoxicillin, 12 g/day, for 6 weeks and gentamicin for 4 weeks. He was judged inoperable because of the size of the aneurysms and a history of cirrhosis. In March, he was discharged from the hospital and started taking oral ciprofloxacin, 500 mg t.i.d. After 1 year, he was completely asymptomatic, and the inflammatory values normalized (sedimentation rate, 23 mm/h; C-reactive protein, 10 mg/L). MRI and CT scans demonstrated a reduction of the periaortic soft-tissue mass, without progression of the diameter of the aneurysms. The antibiotic treatment was stopped in February 1998.

One year later, the infrarenal abdominal aneurysm progressed to 5 cm, whereas the other mycotic aneurysms and the periaortic area remained stable. In March 1999, the infrarenal abdominal aneurysm was successfully treated with an endovascular stent; ciprofloxacin, 250 mg t.i.d., was prophylactically
given for 6 weeks. The patient was reviewed at 6 weeks and at 3, 6, and 9 months; CT scans confirmed aneurysm exclusion, and clinical and laboratory findings did not indicate any prosthesis infections.

Mycotic aortic aneurysms are infrequent, and early diagnosis is often difficult; with high awareness of the disease, serial CT scans or MRI may document the aortic involvement. Prompt surgery (aneurysmal resection and extra-anatomic bypass or in situ prosthetic reconstruction) seems to offer the best chance of survival [1]. Despite this recommended aggressive management, mortality rates of up to 50% are reported. Medically treated patients usually die; however, last year we described a second long-term survivor, who had Salmonella aortitis [2]. Salmonella, Staphylococcus, and Streptococcus species are the most frequent agents of infectious aortitis, but a variety of other organisms can infect vessels.

The only other cases that have been previously reported were an aortic mycotic aneurysm [3] and a prosthetic vascular graft infection [4] caused by P. multocida. The first patient was treated for septic arthritis, but he died 1 week later during surgery for a ruptured mycotic abdominal aneurysm; the diagnosis was confirmed at necropsy. In the second patient, a prosthetic vascular graft infection (right limb of the aortobifemoral graft) caused by P. multocida was successfully treated with surgery and long-term antibiotics. P. multocida is a major pathogen in wound infections caused by animal bites, because it is part of the normal oral flora of many animals, especially cats and dogs [5]. Systemic complications in infections caused by this agent are rare, except in immunocompromised patients, especially those who have chronic liver disease.

In conclusion, mycotic aneurysms are a possible complication of P. multocida infections; it seems that, in particular cases of infectious aortitis, especially those in patients with high surgical risk, suppressive antibiotic therapy (eventually followed by treatment with endovascular stents to prevent aneurysm rupture) can be effective and a possible alternative to major surgery.

**References**