Salmonella typhimurium Infection of Thoracic Aorta Aneurysm in Immunocompetent Subject. Case Report and Literature Review

Summary: The authors describe a Salmonella typhimurium infection of thoracic aorta aneurysm in an immunocompetent subject. The patient, a 62-year-old male, was found to have recurrent S. typhimurium bacteremia despite multiple antibiotic treatments. A roentgenogram of the chest, which was normal on admission, revealed the presence of a first arch enlargement of the heart shadow. A computed tomography confirmed the diagnosis. Surgical resection of the aneurysm was carried out with in situ prosthetic graft interposition. The surgical specimen culture yielded S. typhimurium. The postoperative course was uneventful. Twenty-four months after discharge the patient remained well. A review of English language literature is presented.

Introduction

In approximately 1–2% of autopsies an aortic aneurysm is found and 3–5% of aortic aneurysms are infected. Until about twenty years ago mycotic aneurysms of the aorta were described as uniformly fatal [1]; the percentage of surviving patients has progressively increased thanks to the improvement in preoperative diagnostic procedures and to the progress in surgical techniques.

A careful review of English language literature from 1968 to 1982 [2] showed that the etiologies defined as rheumatic are becoming more rare (aneurysms infected in association with endocarditis were almost an axiom in the preantibiotic era) and that emphasis is now on risk factors [3, 11] and pathogens which rarely cause endocarditis, such as gram-negative aerobic bacilli or salmonellae but which are able to penetrate an undamaged arterial wall or to infect, during the bacteremia, an artery damaged by a preexisting pathological process.

It seems that salmonellae show a special predilection for damaged arterial walls; at present 18–35% of infected aneurysms of the abdominal aorta are caused by Salmonella [3, 9, 12]; among the most common isolates are Salmonella choleraesuis, S. typhimurium and Salmonella enteritidis. Salmonella species cause bacteremia also in young and immunocompetent patients and Salmonella endarteritis with or without mycotic aneurysm have been described repeatedly [1, 3, 5, 7, 10, 12].

In about 75% of the cases, arteritis caused by Salmonella involve an atherosclerotic abdominal aorta. The literature contains very few reports of Salmonella infection with localization in thoracic aorta: all cases were in immunocompromised hosts [4, 11, 13]. We report a case of S. typhimurium infection of the ascending aorta aneurysm in an immunocompetent patient.

Case Report

A 62-year-old male butcher was admitted to a local hospital with a 10-day history of fever, malaise and myalgias. Sepsis was suspected and blood cultures were drawn. On the fourth hospital day group B Salmonella was isolated. Therefore the patient was transferred to our unit. The medical history was unremarkable. On admission a continued remittent high fever (39.0 °C), shaking chills, leukocytosis and neutrophilia (white blood cell count 10,500/mm³ with 79% neutrophils) were present. Pulse was 92/min, blood pressure was 110/55 mm Hg. The physical findings and the roentgenogram of the chest were negative. The cardiac examination showed a non radiating systolic murmur with maximum at the left parasternal edge, but preexistent as the patient said, and also a pericardial rub with typical ECG changes was present. Laboratory data revealed a normochromic normocytic anaemia (red blood cell count 3,720,000/mm³, Hb 10.8 g/dl), a persisting microscopic haematuria and a decrease of total hemolytic complement. Erythrocyte sedimentation rate (ESR) was 81 mm/h, serum creatinine levels and liver function tests were normal. The two-dimensional echocardiography neither revealed vegetations or demonstrated the presence of a significant amount of pericardial fluid. However, on the ground of pericardial friction rub and ECG changes the diagnosis of a Salmonella pericarditis was assumed and therapy with gentamicin 80 mg x 3 i.v./day, trimethoprim-sulfamethoxazole (TMP 160 mg + SMZ 420 mg/day) was started.
800 mg i.v. twice a day) and methylprednisolone 60 mg i.v./day was begun. Meanwhile a S. typhimurium was again isolated from blood and from feces. The patient became afebrile within four days. After 25 days of hospitalization the antibiotic and steroid therapy was discontinued; ESR and ECG were normalized. On the following day fever with shaking chills occurred again and from the blood the same Salmonella strain was isolated. Once more the echocardiography failed to reveal a diagnostic sonolucent space or valvular vegetations. Then according to Kirby-Bauer sensitivity test therapy with cefuroxime 1 g i.v. 4 times daily was given for 28 days in combination with methylprednisolone 60 mg i.v./day for the reappearance of the pericardial rub and for the onset of acute arthritis in the right ankle. When the therapy was discontinued the fever and the bacteremia once again appeared. A treatment with aztreonam 2 g i.v. 4 times daily was begun while an abdominal computed tomography to search a source of infection was negative. But a new roentgenogram of the chest revealed the presence of a first arch enlargement of the heart shadow. Mediastinal computed tomography showed a spindle shaped aneurysm of the ascending aorta with a maximum diameter of 5 cm. The Doppler scanner documented a medium grade aortic valve insufficiency. Therefore the patient was transferred to the department of cardiac surgery of the Bergamo Hospital and, eight months after start of clinical manifestations, the aortic aneurysm (Figure 1) was resected and a Dacron tube graft shunt was placed.

From the surgical specimen (Figure 2) S. typhimurium was isolated. Ofloxacin 300 mg twice a day orally was given for five weeks postoperatively. The patient was discharged one month after operation in fairly good condition. Twenty-four months after the illness began the patient remained asymptomatic.