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Case Report

Aortobifemoral prothesis infection

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ABSTRACT

Introduction: Vascular prosthesis infection constitutes one of the most serious complications in vascular surgery and is associated with a high risk of extremity amputation or death. Possibilities of conservative treatment are limited. The only radical procedure effecting the regression of inflammation is the removal of the infected prosthesis. This usually necessitates vascular reconstruction in the involved extremities. An ideal way to reconstruct blood flow in the lower extremities does not exist.

Aim: This work aimed at presenting possibilities for managing complications in a patient with an aortobifemoral prosthesis.

Case study: The described patient developed symptoms of intermittent claudication at the age of 38 years. When he was 39 years old he had a myocardial infarction, and afterwards problems concerning his lower extremities exacerbated. This necessitated the implantation of aortobifemoral prosthesis. After 5 years, the patient was operated on due to an anastomotic pseudoaneurysm in the left groin area, and then due to hemorrhage from the anastomotic pseudoaneurysm in the right groin area with symptoms of prosthesis infection. In January 2000, the infected prosthesis was removed surgically and a bypass polytetrafluoroethylene (PTFE) graft to both femoral arteries was implanted with a good result. In 2005, the patient was operated on due to a cerebral aneurysm.

Results and discussion: The bypass graft has been functional in the described patient for 11 years, despite progressive atherosclerosis, smoking, three surgeries due to a graft thrombosis and an anastomotic pseudoaneurysm.

Conclusions: Despite the enumerated complications and progressive atherosclerosis, the patient did not manage to give up his addiction (smoking). His case illustrates various difficulties in the course of treating an infected prosthesis, even when bacteria are very sensitive to antibiotics.

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1. Introduction

Vascular prosthesis infections are among the most serious complications in vascular surgery.[12] The current frequency of such complications as reported in literature ranges from 1.3% to 6.0%.[13] An increasing number of vascular surgeries involving grafting contributes to an increased number of patients with infected prostheses. The consequences of this complication can be very serious, with a mortality rate of 75%, depending on the type of complications caused by the infection.[2] One of the symptoms of prosthesis infection is the development of a purulent fistula in the groin accompanied with bleeding that can lead to a life-threatening hemorrhage.[12] When prosthesis infection is limited to the groin area, local surgeries such as graft coverage with a sartorius muscle flap[4] or resection of the infected part and replacing it with a silver impregnated vascular graft[5] and administration of bacteria-specific antibiotics can be effective.[1,2,4,6] However, massive infections of the prosthesis, especially accompanied with bleeding, require a complete removal of the infected prosthesis and vascular reconstruction in the extremities. Reconstructive vascular surgeries vary, depending on the available material.[3,8,9,10] In arterial reconstructive surgeries following a complete removal of the prosthesis both the synthetic materials, the patient's own veins and the allogenic material (arteries from organ donors) can be used.[7,8,9,11]

2. Aim

This work aims at presenting possibilities for managing complications in a patient with an aortobifemoral prosthesis.

3. Case study

A 38-year old patient, habitual smoker, reported to the Vascular Outpatient Clinic on 31 October 1989 due to intermittent claudication with the walking distance of approximately 50 m, associated with a bilateral iliac artery occlusion. He had been treated for arterial hypertension. In both groin areas the pulse was undetectable. Blood cholesterol was at a level of 200 mg%. Conservative treatment was introduced.

On 4 February 1990, the patient, aged 39 at that time, underwent a myocardial infarction with circulatory arrest. Following the infarction, the walking distance in intermittent claudication shortened. Conservative treatment was continued. Lower extremities ailments progressively exacerbated. At the end of 1993, rest pain in both lower extremities occurred. The patient was admitted to the Department of Surgery at the Provincial Specialist Hospital in Olsztyn on 17 December 1993 due to lower extremity ischemic rest pain. On admission the following parameters were recorded: blood pressure (BP) – 160/110 mmHg, electrocardiogram (ECG) – regular sinus rhythm of 118/min, QS syndrome in lead III and AVF complex, condition after an inferior myocardial infarction, blood type – 0 Rh(+); blood test results: WBC 10.2×10^9/L, RBC 4.82×10^9/L, HGB 15.7 g/dL, HCT 47.2%, PLT 347×10^9/L. Surgery was performed on 29 December 1993 and involved implantation of an albumin impregnated aortobifemoral graft. In the postoperative period, lymphorrhea from wounds in both groin areas occurred as well as purulence in the right groin wound and the abdominal wound. Bacterial cultures of the abdominal wound fluid revealed group D streptococci and of the right groin wound fluid single cocci *Micrococcus* species. The wound in the right groin required resuturing. The patient was discharged on 14 January 1994 to be further treated within the outpatient framework, with healed postoperative wounds and palpable pulsation of both feet arteries.

The patient was readmitted to hospital on 22 September 1999 due to pseudoaneurysms in both groins and a purulent fistula in the left groin area. He underwent the left-side pseudoaneurysm surgery: the purulent fistula was resected, pseudoaneurysm was operated on. Leakage from the anastomosis between the prosthesis and the femoral artery laterally into the pseudoaneurysm was observed. The anastomosis was repaired with a running suture. Surgical documentation contains no information concerning the prosthesis infection. A gentamicin-soaked sponge was inserted into the wound before its closure. A control ultrasonograph (USG) examination revealed a hypoechogenic area at the anastomosis between the prosthesis and the left femoral artery, no flow visible on color Doppler images. The patient was discharged on 8 October 1999, the wound healing by first intention, to be treated within the outpatient framework.

On 15 October 1999, the patient was admitted to the Department again due to partial wound dehiscence in the left groin with symptoms of approximate tissues infection, and massive lymphorrhea. Conservative treatment was administered. Bacterial cultures of the wound revealed *Staphylococcus aureus*, a methicillin-susceptible strain. He was discharged on 29 October 1999, with a minor wound purulence to be treated within the outpatient framework.

On 1 December 1999, he was admitted due to bleeding from a purulent fistula in the left groin. Traces of blood on the dressing had appeared 2 weeks before. Bacterial cultures of the purulent fistula fluid revealed *S. aureus*, a methicillin-susceptible strain. A USG examination performed on 3 December 1999 revealed no evident pathologies in the periaortic region and in the proximity of both external iliac arteries (within the range available in the examination); condition after the implantation of an aortobifemoral prosthesis. Initially the patient was treated conservatively and received a culture-specific antibiotic. On 10 December 1999 a surgical procedure was performed. The purulent fistula was managed surgically, the anastomosis between the prosthesis and the artery was exposed. No blood leakage through the anastomosis was detected. Blood was leaking via the prosthesis wall. The prosthesis was covered with granulation tissue. As far as possible, granulation tissue was removed. A granulation swab was taken to be cultured. A gentamicin-soaked sponge was placed over the prosthesis. Both the prosthesis and the anastomosis with the femoral artery were covered with a sartorius muscle flap. A Redon drainage catheter was inserted and the wound was sutured. Bacterial cultures of the granulation tissue from the area approximate to the prosthesis revealed *S. aureus*, a methicillin-susceptible