CLINICAL STUDY

Infection of vascular prosthesis in aortofemoral area

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Abstract

Objectives: To determine the frequency of vascular prosthesis infection in aortofemoral area and to demonstrate their course, treatment and risk factors.
Methods: The file was formed by patients who had been operated on because of infection of vascular reconstruction in aortofemoral area at IIInd department of surgery of the St. Anne’s Faculty Hospital in Brno in the 2000–2004 period. The data from personal case histories and risk factors were evaluated by means of basic statistical methods. We present the diagnostic methods used and operation procedures. The results were compared to the ones from the vascular register and to the conclusions from other vasculosurgical workplaces.
Results: In the period discussed, 7 patients were operated on for infection of vascular reconstruction in aortofemoral area. The period between the implantation proper and the manifestation of the infection ranged from 13 months to 15 years. The infection manifested most often by purulent secretion in groin. The most frequent infection agent is the staphylococcus. In 4 cases immediate explantation of the whole vascular prosthesis was carried out. In 3 cases partial resection was carried out, followed by explantation of the remainder of the prosthesis after stabilisation in 2 cases. In 4 patients revascularization by extra-anatomic bypass was carried out. Three patients died during their hospitalization as a result of sepsis. On the whole 6 high amputations of lower limbs were carried out with 4 patients.
Conclusion: Vascular prosthesis infection in aortofemoral area is among less frequent, but substantially serious and difficult-to-solve complications of vascular surgery (Tab. 3, Ref. 18). Full Text (Free, PDF) www.bmj.sk.

Key words: aortofemoral reconstruction, prosthetic infection.

Vascular prosthesis infection in aortofemoral area is among less frequent, but substantially serious and difficult-to-solve complications of vascular surgery. They are accompanied by high mortality and by running the risk of loss of the lower limb. The aim of this study is to determine their frequency in the period discussed at this workplace and to demonstrate their course, treatment and risk factors of their inception.

Methods

The file was formed by patients who had been operated on because of infection complications of vascular reconstruction in aortofemoral area at IIInd department of surgery of the St. Anne’s Faculty Hospital in Brno in the 2000–2004 period. The depth of their infection reached the IIId stage of the Szilagyi classification (17). Basic data about each individual patient, data from personal case histories, information about vascular prosthesis type, implantation, and finally the data concerning the infection proper and its treatment, were searched for. The study is focused on the infection agent, type of manifestation and the period between implantation and manifestation of the infection. Furthermore, the diagnostic methods used and operation procedures, their fruitfulness, occasional subsequences and the patient’s current state were evaluated. The data evaluation has been carried out by means of basic statistical methods. The results were compared to the ones from the vascular register and to the conclusions from other vasculo-surgical workplaces.

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Results

In the period discussed, 7 patients were operated on for infection of vascular reconstruction. All of these patients were males and their average age was 60 years (56 to 66 yrs). Their BMI reached on average 23.5 (21.1 to 27.0) and only in one case (27.0) it exceeded the norm (Tab. 1).

It was at this workplace that all of the seven patients were subjected to primary implantation of collagen-impregnated knitted vascular prostheses made by Výzkumný ústav pletařský in Brno. Aorto-bifemoral prosthesis was implanted in 6 patients, aorto-femoral bypass in 1 patient. Average age at the time of implantation was 53 years (41 to 64 yrs) and with all the seven patients, its indication was atherosclerotic damage of arteries. In all of the 7 cases penicillin antibiotics were used for antibiotic prophylaxis. Postoperative complications emerged in 3 cases: once surface wound infection, once evertation and once the occurrence of influenza symptoms.

The case histories revealed that 6 patients were smokers and hypertension was found in 4 of them. Out of other diseases there was an emergence of diabetes mellitus (1 patient), ischemic heart disease (1 patient), and seropositive rheumatoid arthritis (1 patient). With 3 patients there was a defect of the lower limb at the time of the implantation; in one of these cases simultaneously recurrent erysipelas of the crus was present.

The period between the implantation proper and the manifestation of the infection ranged from 13 months to 15 years, 7 years (88 months) on average. In all cases, late infection was thus in question. In one case there was a femoro-popliteal prosthesis infection prior to bifurcation prosthesis infection.

In all cases ultrasonography (7 patients) was applied in the diagnosis. Computer tomography was applied to 4 patients, angiography to 5.

With 5 patients the infection manifested by purulent secretion in their groins, with another by peritonitis, and with yet another an aorto-duodenal fistula came about.

Among the infection agents there is a prevalence of staphylococci (4 patients), namely Staphylococcus aureus (2) and coagulase-negative staphylococcus (2), out of others Proteus mirabilis (1) and nonA nonB beta-hemolytic streptococcus (1). In one case, microbes failed to be cultivated.

In 4 cases, the operational solution consisted of immediate explantation of the whole vascular prosthesis. In 3 cases, partial resection was first carried out, out of these twice with the explantation of the remainder of the prosthesis after stabilising the patient. In 4 patients, revascularization by extra-anatomic axillo-femoral bypass was subsequently carried out. Two of these, though, had to be extirped for subsequent infection. Three patients died during their hospitalization as a result of sepsis (i.e. early mortality of 43 %). On the whole, 6 high amputations of
lower limbs were carried out with 4 patients (i.e. with 57 %), out of which one case was exarticulation in the hip (Tab. 2).

At present, one patient has died of ischemic heart disease complications, one has a substantial limb perfusion and yet another one walks on artificial limbs. The current state of one patient is not known.

According to the vascular register, in the period discussed, 721 vascular reconstructions in aortofemoral area were carried out. The above-mentioned 7 patients with an infection complication represent 0.97 % of the vasculosurgical operations in this area.

Discussion

According to the available literature from other workplaces, the occurrence of infection complications, early mortality, and amputation are summarized in Table 3.

The most frequent agent of the vascular reconstruction infection is the staphylococcus. MRSA (methicillin resistant Staphylococcus aureus) has not been recorded in our files (5). In one case, no infection agent was revealed. The period between the implantation and the manifestation of the infection ranged from 13 months to 15 years in this study, the literary sources mention even periods longer than 20 years (15). The most frequent type of manifestation was purulent secretion in the groin.

In therapy the most frequent attitude resides in the explantation of the whole vascular prosthesis in 4 cases, with provision of the perfusion of lower limbs by extra-anatomic reconstruction in 2 cases. There were two partial resections of the prosthesis with the explantation of the remainder of the prosthesis after stabilising the patients. Radicalism of the attitude varies substantially from one literary source to another (5, 16).

The fruitfulness of therapy results varies as well. The early mortality is alleged from 9 % up to 50 % (8, 11). The percentage of patients on whom it was necessary to carry out an amputation of at least one lower limb ranges from 0 % to 60 % (1, 10). Our results fall within these limits. They are affected by the size of our file and by the varying definition of the early postoperative mortality. Ischemic disease of lower extremities influences also the results of extra-anatomical revascularization outcome and there by even the amputation rate.

According to the available literary sources the infection complications represent 0.8 % to 2.6 % of vasculosurgical operations in aortofemoral area (2). From this point of view, our results are fully comparable with the ones from other workplaces.

References


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