TJVS Turkish Journal of Vascular Surgery

Turk J Vasc Surg 2024;33(3):186-8
DOI: 10.9739/tjvs.2024.01.04

Available online at www.turkishjournalofvascularsurgery.org

Case Report

Candida associated infra-inguinal prosthetic vascular graft infection: A case report

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Received: January 25, 2024 Accepted: April 03, 2024 Published online: June 28, 2024

Abstract

Prosthetic vascular grafts (PVG) are artificial vascular materials used for revascularization in the treatment of vascular diseases. Due to increase in life expectancy, the number of individuals requiring PVGs is increasing and encountering the PVGI is also more frequent. We presented an interesting case operated because of infected graft in which Candida albicans grew. The patient had been operated twice for peripheral artery disease in another hospital before. We performed femoro-popliteal bypass by using great saphenous vein after removal of infected graft. In peripheric bypass surgery performed with PTFE (polytetrafluoroethylene) graft, growth of Candida albicans in graft material is a rare condition and this situation has a high mortality rate. In the patients with comorbidities and who will undergo redo-surgery, excessive care should be given in terms of graft infections.

Keywords: Prosthetic vascular grafts, candida infection, infra-inguinal by-pass

INTRODUCTION

Prosthetic vascular grafts (PVGs) are artificial vascular materials used for revascularization in the treatment of various vascular diseases such as peripheral arterial disease (PAD), vascular access for hemodialysis, aortic aneurysms and aortic dissection [1]. Due to the increase in life expectancy, the number of individuals requiring PVGs is increasing, accordingly, encountering the prosthetic vascular graft infections (PVGI) is more frequent [2,3]. The main causes of infection are bacterial colonization of the wound and prosthetic material and direct contamination from the skin during surgery [3]. Symptoms may include systemic fever, local temperature rise at the incision site, swelling, bleeding, inflammation, critical leg ischemia due to graft thrombosis or regression in medical condition [1-3]. Prevalence of PVGI is reported to range from 3.8% to 29.3% and amputation rate is found up to 60% according to single-centric studies [4]. In this paper, we wanted to present a case that we operated because of infected graft in which Candida albicans grew.

CASE REPORT

A 48-year-old patient who had been operated twice for peripheral artery disease in another health center applied to our out-patient clinic. Femoro-popliteal graft bypass surgery was performed by another surgeon two years ago. One year after the first surgery, the same surgeon revised the old graft and performed end to end anastomosis between graft and native popliteal artery. The patient came to our out-patient clinic with the complaint of bleeding from supra-genual incision in the left lower limb. Peripheral angiography was performed and no pathology was found. For further investigation, CT angiography was performed. At the distal part of the femoropopliteal graft, heterogeneous soft tissue surrounding the graft was seen and measured as 84x40 mm (Figure 1A).

We decided to remove the old PTFE (polytetrafluoroethylene) graft and perform femoro-popliteal graft bypass with greater saphenous vein. Verbal and written consent was obtained from the patient for the operation.

CITATION
Kaya AD, Metin Kaya EN, Alur I. Candida associated infra-inguinal prosthetic vascular graft infection: A case report. Turk J Vasc Surg. 2024;33(3):186-8.

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At the beginning of the operation, we prepared greater saphenous vein from right lower limb proximal side. After the exploration of previous femoro-popliteal graft at femoral and supragenual sides, we saw plenty of hematomas (Figure 1B). We took samples for culture from hematomas and infective tissue before the debridement. Infected graft was removed and femoro-popliteal bypass surgery was performed by using greater saphenous vein of contralateral limb (Figure 2A, 2B). After surgery, patient was transported to intensive care unit. Postoperative lower limb pulses were palpable.

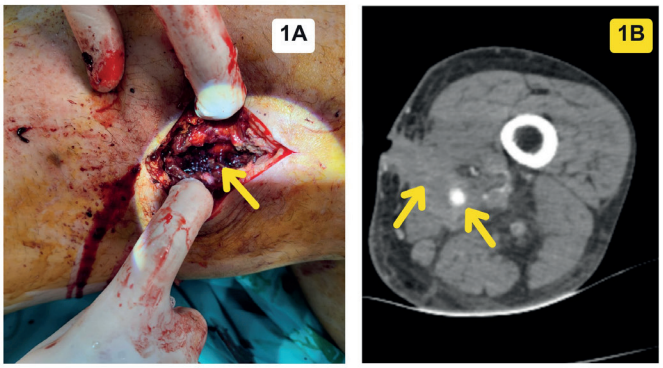

Figure 1. A. CT angiographic image of infected tissue, **B.** Hematoma at supragenual region

Blood culture was clear but Candida albicans was isolated in the specimens taken from the tissue. We consulted patient to the infectious diseases unit. They started intravenous treatment with fluconazole (800 mg loading, 1*400 mg maintenance), meropenem (3*1 gr) and linezolid (2*600 mg). Infective markers (WBC and CRP) were checked daily and regression was seen day by day. CT scan was performed in postoperative day 14 (Figure 2C) showing no infectious tissue around autologous graft. We discharged the patient on the 14th postoperative day with prescribing oral fluconazole (1*200 mg) for a week in addition to clopidogrel (1*75 mg) and ecopirin (1*100 mg).

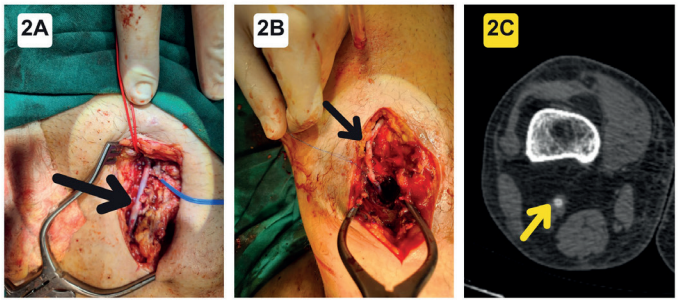

Figure 2. A, B. Femoropopliteal bypass with greater saphenous vein, **C.** Control CT image in postoperative 14th day

DISCUSSION

In a patient with infra-inguinal bypass performed with a PTFE graft, growth of Candida albicans in resected infected material is a rare condition and this situation has a high mortality rate [5]. PVGI is the most dreaded complication after infra-inguinal bypass [4]. PVGI is associated with a high mortality rate of up to 45% at five years, as well as recurrent infection, and anastomotic rupture [6]. Bleeding or pseudoaneurysm formation at the anastomosis site is a common complication in vascular surgery with Dacron grafts [7]. Our patient also presented with bleeding and hematoma from the incision site above the knee. Recent analysis of American College of Surgeons National Quality Improvement Program showed that infection was the most common cause of readmission after vascular surgery [8], particularly after lower extremity bypasses, with rates of up to 40% [4]. PVGI has very serious complications such as anastomosis bleeding, sepsis and death [7]. In a study of patients who underwent infra-inguinal bypass using a heparin-coated PTFE graft, 1-year mortality rate was still as high as 12%; patients with PVGI complications were likely to undergo major amputation [4]. Also in this study, critical limb ischemia (CLI) was the only significant predictor of PVGI; although it is a reasonable marker, it has been reported that it should be used as a more comprehensive measurement since the presence of ischemic ulcer or gangrene does not predict PVGI [4].

Preventing these infections still remains a major concern. The most recent studies have focused on the markers of surgical site infection [4]. PVGI is mostly seen in groin area [1]. In addition to preoperative measures and prophylactic antibiotics, lower infection risk is aimed via using antimicrobial-impregnated or heparin-coated vascular grafts [4,6]. Patient-related risk factors can be listed as old age, male gender, high body mass index, heart failure, immune system deficiency, diabetes, kidney failure and chronic obstructive pulmonary disease. However, the major risk factor for the development of PVGI is the groin incision [3]. Surgeons follow patients with a comprehensive treatment strategy that includes careful wound care and follow-up after surgery. In the study of Monnier et al., 475 patients had undergone supra-inguinal bypass graft surgery; PVGI was seen in 148 (31.1%) of them; fungal agent was isolated in 32 (6.7%) out of 148 and non-fungal in 116 (24.4%) [5]. Mortality rate at 180 days was significantly higher in cases with fungal PVGI compared to non-fungal PVGIs (38% vs. 16%) [5]. Prosthetic graft-intestinal fistula and preoperative antibiotic therapy for seven days or longer have been reported as independent risk factors associated with fungal PGVI. In our case, there was long-term antibiotic use due to two previous femoro-popliteal bypass operations, which most likely increased the risk of fungal infection. There were DM and a history of re-do infra-inguinal bypass surgery as risk factors.

Treatment of PVGI includes removal of the infected graft, extensive debridement of the infected region, taking samples for culture from the surgical area, subsequent revascularization and appropriate antibiotherapy [3]. If the graft infection has not

spread to the surrounding tissues and is limited, and if there are no findings such as hematoma and bleeding, either the graft is partially removed and anastomosed with the new graft, or the infection can be treated with antibiotics and negative pressure (vacuum) wound care systems without removing any graft [3]. In our case, the graft was thrombosed and there was an opening at the anastomotic suture line leading to bleeding and hematoma. Therefore, we resected the graft completely, we performed femoro-popliteal bypass by using greater saphenous vein. The patient was discharged with oral fluconazole tablets after 14 days of intravenous multi-drug treatment. Additionally, clopidogrel and acetylsalicylic acid were prescribed.

CONCLUSION

As a result, in the patients who have comorbidities such as DM and who will undergo redo-surgery, excessive care should be given in terms of graft infections.

Patient Consent for Publication: Approval received.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: All authors contributed equally to the article.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

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