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Aorto-femoral bypass in the HIV infected patient

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Summary

We describe a 49-year old male Nigerian with HIV infection who presented in our institution with aorto-iliac arterial occlusive disease and progressive severe ischaemic changes of the lower extremity. His preoperative CD4 count was 43 cells / microlitre. He underwent a successful intra-peritoneal aorto-femoral bypass. This report illustrates that vascular reconstruction in an HIV infected patient can be successfully performed with minimal morbidity despite a high risk factor for major infection. The histological finding was in keeping with an accelerated atherosclerosis resulting from HIV infection.

Keywords: *Aorto-femoral bypass, HIV infection, and Vascular reconstruction.*

Résumé

Dans cette étude, nous décrivons un homme adulte Nigérien âgé de 49 ans infecté avec le VIH qui s'est présenté dans notre institution avec une occlusion aorto-iliaque artérielle, et des changements ischaémiques progressifs du membre inférieur. Son compte de CD4 avant la chirurgie était de 43 cellules/microlitre de sang. Cet individu subit une chirurgie avec succès de l'aorto-fémorale intrapéritonéale. Ce rapport démontre que la reconstruction vasculaire chez un patient infecté avec le VIH peut se faire avec succès et avec une morbidité minimale, en dépit du risque élevé des infections majeures. Les résultats histologiques ont montré une athérosclérose accélérée provenant de l'infection au VIH.

Introduction

Human immunodeficiency virus (HIV) infection has impacted on all systems of the body and the cardiovascular system is no exception. There are several reports of occlusive arterial disease in HIV infected patients [1,2] Surgery in these patients can however be safe and effective [3].

This report describes our experience with a HIV positive patient who presented with aorto-iliac occlusive arterial disease. It illustrates that successful vascular repair can be achieved despite very low CD4 count.

Case report

A 49-year old male retired Banker presented with a week history of progressive painful swelling and coldness of the left leg. There was no antecedent trauma or prolonged

immobilization or history of intermittent claudication. He was a known Hypertensive for 8 years controlled on Moduretic® tablets. He admitted to previous history of herpes zoster infection and hepatitis. He had a 25 pack-year smoking history. The initial diagnosis was that of deep venous thrombosis (DVT) and suspected HIV infection. He was subsequently referred to the Cardiovascular Division due to evidence of ischaemic changes in the limb.

On examination his blood pressure was 160/120mmHg and auscultation revealed absence of cardiac murmurs. There was pitting pedal oedema, coldness and tenderness of the distal half of the left leg. The left popliteal and femoral arterial pulsations were grade 2/4 with decreased active movements of the left ankle and toes. Sensation was intact. The right lower limb was essentially normal. A diagnosis of left common femoral artery thrombosis was made. He was commenced on heparinization while awaiting preparation for further investigation and surgical intervention.

Left lower limb ultrasound scan revealed narrowing of the superficial femoral artery at the mid thigh with features of calcified plaque in the same area and absence of flow pattern distally. Accompanying venous circulation appeared normal. HIV 1 and 2 screening using Western Blot technique was reactive. The CD4 count was reported as 43 cells / microlitre. Other laboratory investigations including serum electrolytes urea and creatinine, lipid profile, blood sugar and coagulation profile were normal.

A subsequent examination two days later revealed a bruit over the left aorto-iliac area and an impalpable left femoral artery pulsation. A diagnosis of left aorto-iliac occlusive disease was then made. A helical CT angiographic study was carried out with the use of intravenous contrast. This revealed occlusion of the left common iliac artery (Fig. 1, 2). An intra-peritoneal aorto-femoral artery bypass using a woven Dacron® graft was done. Findings at surgery included evidence of multiple atheromatous plaque in the distal abdominal aorta and totally occluded left common iliac artery. Multiple thrombi were removed from the femoral arterial system using Fogarty embolectomy catheter. Post-operatively, there was eventual restoration of the left dorsalis pedis and popliteal artery pulsations as well as active ankle and toe movements. He developed a hyperpigmented blister on the medial aspect of the distal

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half of the left leg which progressed to an oval necrotic patch measuring 8cm x 5cm involving portion of the underlying muscle. He was commenced on anti-retroviral drugs (Lamivudine®, Stavudine® and Nevirapine®) in compliance with accepted management protocol. Significant improvement was noted in the leg ulcer though incompletely healed at time of discharge. Histopathology of the arteriotomy specimen from the proximal and distal anastomotic sites revealed calcific atheromatous plaques.



Fig. 1: CT Angiogram showing complete occlusion of Left common iliac artery. Presence of collaterals confirms chronicity of underlying pathology

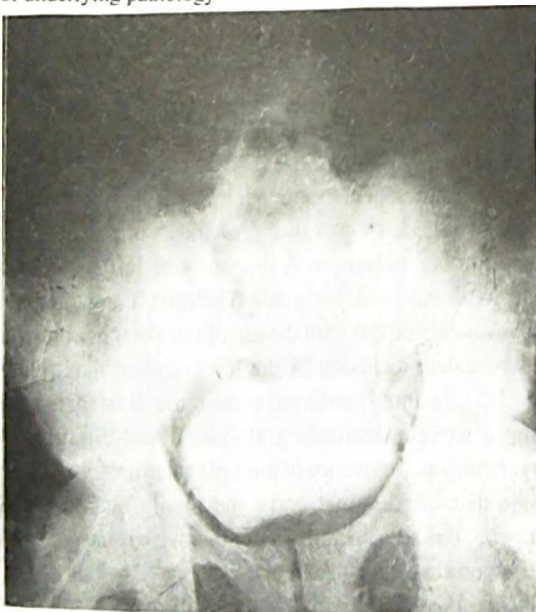


Fig. 2: CT Angiogram, later phase of study, showing some reconstitution of proximal left common femoral artery.

On review 18 months after his surgery the leg ulcer had completely healed, despite default from anti-retroviral drug regimen for the past one year. There was

excellent function of his left leg with minimal restriction of extension, inversion and eversion at the ankle joint. Pulses were still grade 3/4 at the left popliteal and dorsalis pedis artery.

Discussion

While atherosclerosis remains the commonest aetiology for aorto-iliac occlusive disease worldwide, the relative rarity in indigenes in developing countries is well documented [4]. Symptoms are also unusual before the 6th decade of life in patients with this condition. The index case is therefore unusual by being a Nigerian in the 5th decade of life presenting with severe atherosclerotic disease in the absence of multiple risk factors. It is now recognised that HIV disease can give rise to vasculopathy in the form of aneurysms or occlusive disease [1,3]. The commonly involved vessels include the carotids, the iliacs, the femorals and the popliteals. Interestingly, in the report by Nair *et al* [2] of 20 HIV patients with symptomatic large vessel occlusive disease the median age was 37 years. They [1,2] noted that the histopathology was “leukocytoclastic vasculitis of vasa vasora and periadventitial vessels”. These findings are said to be indicative of HIV vasculitis.

However, others [5] have noted the occurrence of accelerated atherosclerosis both in the coronary arteries and in the aorta. The latter has been attributed to be either the direct effect of HIV infection or result of antiretroviral drugs (particularly protease inhibitors) or to both effects [5,6]. In the case reported by Mirza *et al* [5], the patient had been on highly active antiretroviral therapy (HAART) for several years and the early evidence of atherosclerosis, presenting as ascending aortic aneurysm, was attributed to drug related accelerated pathological process. It is now accepted that HIV infected patients on combination antiretroviral regimens have increased risk of early-onset atherosclerosis [6].

The reported patient, though clearly a case of accelerated atherosclerosis, had not been on anti-retroviral drugs prior to the onset of his arterial disease. The pathogenesis of his disease is most likely direct effect of his HIV infection in the setting of only one identifiable risk factor, viz. smoking. Of note is also that by definition, the patient, with a CD4 count of less than 200 cells / mm³ was in a state of overt AIDS. Additionally, it has been reported that a spectrum of inflammatory disease occurs with HIV ranging from necrotizing vasculitis to unspecific types [7]. Thrombotic occlusion of normal artery has also been reported [8] as initial manifestation of HIV and represents the haematological derangement resulting in predisposition to hypercoagulable state in AIDS [9].

This case confirms previous report of others [3-10] that major vascular reconstruction can be undertaken in patients with HIV. Of note in our patient, is that this was accomplished despite a low CD4 count. We therefore affirm

that the presence of severely depressed immune status may not represent a contraindication to major surgery in patients with HIV in absence of other co-morbid factors.

Conclusion

A successful aorto-femoral bypass with minimal complication is possible in an HIV positive patient with a very low CD 4 count who presents with common iliac artery occlusive disease. There is a need for increased awareness of early onset of atherosclerosis in HIV patients with risk factors for vascular disease.

References

1. Chetty R, Batitang S and Nair R. Large artery vasculopathy in HIV- positive patients: another vasculitic enigma. *Hum. Pathol.* 2000; 31: 374- 379.
2. Nair R, Robbs J.V, Chetty R, Naidoo NG and Woolgar J. Occlusive arterial disease in HIV infected patients: a preliminary report. *Eur. J. vasc. Endovasc. Surg.* 2000; 20: 353- 357.
3. Van marle J, Tudhope L, Weir G and Botes K. Vascular Disease in HIV/ AIDS patients. *S. Afr. Med. J.* 2002; 92: 974- 978.
4. Adebo O.A., Osinowo O., Adebajojo S.A and Grillo I. A. Vascular Surgery at the University College Hospital, Ibadan. *Cadiology Tropicale, Tropical Cardiology*, 1982; 8: 113 – 121.
5. Mirza H, Parag P, Krishnamurthy S, Krukenkamp I and Lawson WE. HIV Disease and an atherosclerotic ascending aortic aneurysm. *Review of Cardiovasc Med.* 2004; 5: 176-181.
6. Sklar S and Masur H. HIV Infection and Cardiovascular Disease – Is There Really a Link? *N Engl J Med* 2003; 349; 21: 2065-2067.
7. Gerhardi R, Belec L, Mhiri C, Gray F, Lescs MC, Sobel A, Guillevin L and Wechsler J. The Spectrum of vasculitis in human immunodeficiency virus-infected patients. A clinicopathologic evaluation. *Arthritis Rheum.* 1993; 36: 1164-1174.
8. Witz M, Lehmann J and Korzets Z. Acute brachial thrombosis as the initial manifestation of human immunodeficiency virus infection. *Am J Hematol.* 2000; 64 137-139.
9. Saif MW, Bona R and Greenberg B. AIDS and thrombosis: retrospective study of 131 HIV-infected patients. *AIDS Patient Care STDS.* 2001 15: 311-320.
10. Silva MB Jr, Simonian GT, Gilani A, Pappas PJ and Hobson RW 2d. Aortic reconstruction in the HIV infected patient. *J. Med.* 1999; 30: 122-126.

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