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Case Report

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Pseudoaneurysms of large arteries associated with AIDS

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ABSTRACT

Background: Several vascular complications are known to occur in association with the acquired immunodeficiency syndrome (AIDS) and recent publications have called attention to the development of pseudoaneurysms of large arteries in patients with AIDS.

Case report: We report on 2 patients with AIDS aged 23 and 31 years with pseudoaneurysms of the abdominal aorta and common iliac arteries. After clinical and radiological evaluation by arteriography and computed tomography, the patients were submitted to aneurysmectomy, with the placement of a patch of dacron in the first case and the interposition of a right aorto-iliac and left femoral prosthesis in the second. The second patient developed new aneurysms of the right subclavian and left popliteal arteries 2 months after surgery. Proximal ligation of the right subclavian artery was performed to treat the first aneurysm and resection and interposition of a reversed saphenous vein was carried out to treat the pseudoaneurysm of the popliteal artery. Histopathological examination of the popliteal artery revealed necrotizing arteritis.

Keywords: Aneurysms. Ssurgery in AIDS patients. Acquired immunodeficiency syndrome.

INTRODUCTION

Several complications have been reported as being associated with the acquired immunodeficiency syndrome (AIDS). In addition to Kaposi's sarcoma, some vascular manifestations have been reported, such as vasculitis,[1-4] and cutaneous vascular tumors.[5] Some reports have called attention to the possibility that patients with AIDS will develop pseudoaneurysms of the large arteries.[6,7]

The objective of the present report was to describe two patients with pseudoaneurysms of the abdominal aorta and/or iliac arteries associated with AIDS.

CASE REPORTS

Case 1

A 23 year old black male, a machine operator, complained of burning pain that had lasted for a period of one year on his left flank, at times with colic, which irradiated to the epigastrium and mesogastrium. The signs and symptoms had worsened during recent months and severe arterial hypertension was diagnosed on the occasion

of his first medical visit, with institution of treatment. The patient reported pulmonary tuberculosis treated one year earlier. He denied alcoholism, cigarette smoking, family history of aneurysms, use of injectable drugs, sexual promiscuity or homosexuality. He reported partial amaurosis due to optic neuritis 2 years earlier.

On one of his return visits for reevaluation, a pulsatile, expansive 5 x 5 cm tumor mass, with no murmur, was palpated in the epigastrium, with all distal pulses palpable and symmetrical. Arterial pressure was 190 x 160 mmHg and heart rate 92 bpm.

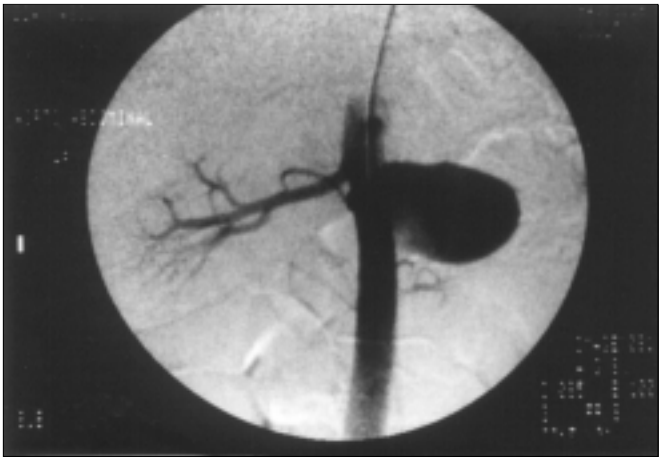

Figure 1 - Abdominal aortogram of case 1, showing a saccular aneurysm (pseudoaneurysm) of the abdominal aorta and occlusion of the left renal artery.

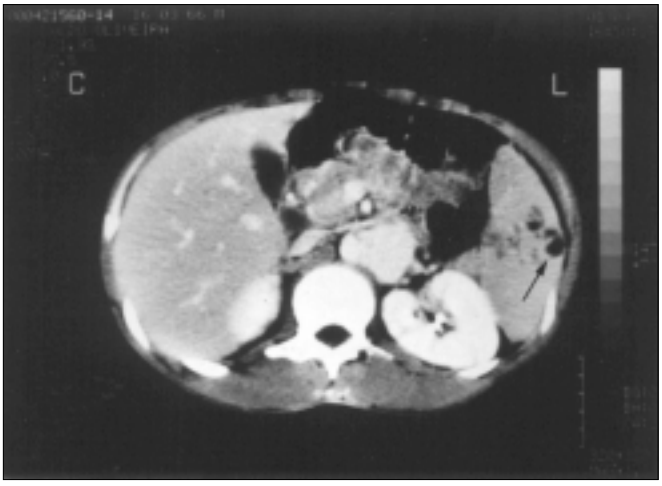

Figure 2 - Computer tomography of case 2, revealing spleen cysts or abscesses (arrow) and retroperitoneal adenomegaly.

Under these conditions, the patient was referred to the Division of Vascular Surgery and Angiology of the Faculty of Medicine of Ribeirão Preto, University of São Paulo (FMRP-USP). The patient was admitted for evaluation, with a diagnosis of abdominal aortic aneurysm. Arteriography revealed two saccular abdominal aortic aneurysms, one of them suprarenal on the left, and the other infrarenal, as well as occlusion of the left renal artery (Fig. 1). Serologic tests for syphilis, hepatitis D and Chagas' disease were negative. HIV infection was diagnosed by an immunoenzymatic test (ELISA) and by latex particle agglutination. The results of these serology tests became known after surgical treatment. Laparotomy revealed an aortic pseudoaneurysm between the left renal artery and the superior mesenteric artery. The patient was submitted to aneurysmectomy of the abdominal aorta and the artery was closed with a dacron patch. Culture of the thrombi obtained from the aneurysm was negative. No biopsy of the abdominal artery was obtained.

The patient evolved well during the immediate postoperative period. After discharge from the hospital, he was found to continue to have arterial hypertension despite the use of various hypotensive drugs. The condition was defined as renovascular hypertension and the patient was submitted to left nephrectomy three months after the first surgery. The kidney presented hyaline arterionephrosclerosis and secondary renal atrophy. The patient had a relatively good course and has been followed up at the infectious diseases outpatient clinic for 49 months (up to November 1998) for the control of the basal disease (AIDS).

Case 2

A 31-year-old mulatto male, a machine

operator, was referred to FMRP-USP with a complaint of pain of the iliac fossae, especially on the left, irradiating to the left thigh for the preceding 3 months. The pain ameliorated with rest. He reported a worsening of symptoms during the last month. He had a history of cigarette smoking, use of intravenous drugs, gonorrhea and sexual promiscuity. He denied a family history of aneurysms. Arterial pressure was 130 x 80 mmHg and heart rate 88 bpm. Laboratory work-up revealed hepatitis B and HIV infection by the immunoenzymatic test (ELISA) and by latex particle agglutination. A pulsatile, expansive 10 x 10 cm mass was palpable in the left iliac fossa, with systolic fremitus and murmur, and a 5 x 5 cm mass with the same characteristics as the previous one was palpable in the right iliac fossa. Computed tomography revealed pseudoaneurysms of the iliac arteries, an abdominal aortic pseudoaneurysm close to the left renal artery, spleen cysts and/or abscesses and retroperitoneal and mesenteric adenomegaly (Fig. 2). Aortography revealed an abdominal aortic pseudoaneurysm close to the left renal artery and 2 enormous pseudoaneurysms of the common iliac arteries (Fig. 3).

The patient was submitted to exploratory laparotomy in April 1997 and a saccular pseudoaneurysm measuring 4 cm in diameter, with a 1.5 cm neck was detected on the anterior wall of the juxtarenal aorta, in addition to two pseudoaneurysms of the common iliac arteries, one on the right measuring 8 cm in diameter, and one on the left measuring 10 cm. A bifurcate right aorto-iliac and a left common femoral dacron prosthesis were inserted. Thrombus cultures were negative and histopathological examination of preaortic lymphatic ganglia showed reactional hyperplasia accompanied by granulomatous inflammation. Ziehl-Neelsen and GMS staining did not reveal the presence of fungi.

The patient evolved well during the postoperative period but 2 months later presented a pulsatile mass in the right supraclavicular fossa. Angiography revealed an aneurysm of the proximal third of the subclavian artery. The patient reported local pain that irradiated to the upper limb.

We opted for proximal ligation of the subclavian artery to relieve the painful symptoms. The pain improved and the patient was discharged from the hospital. Three months later he developed a pseudoaneurysm of the popliteal artery. An end-to-end reversed saphenous vein graft was carried out to treat the pseudoaneurysm of the popliteal artery. Histopathological examination of the popliteal artery revealed destruction of the arterial wall and hemorrhagic necrosis also reaching the adventitia, characterizing nonspecific necrotizing arteritis.

One week after this last surgery the patient was discharged in good condition and continued to be treated for AIDS on an outpatient basis. An ultrasound examination performed in March 1998 revealed 2 anastomotic aneurysms of the abdominal aorta (aortic anastomosis, 7 x 4 cm) and of the left common femoral artery (left femoral anastomosis, 5 x 4 cm). The patient died in April 1998 after rupture of the anastomotic

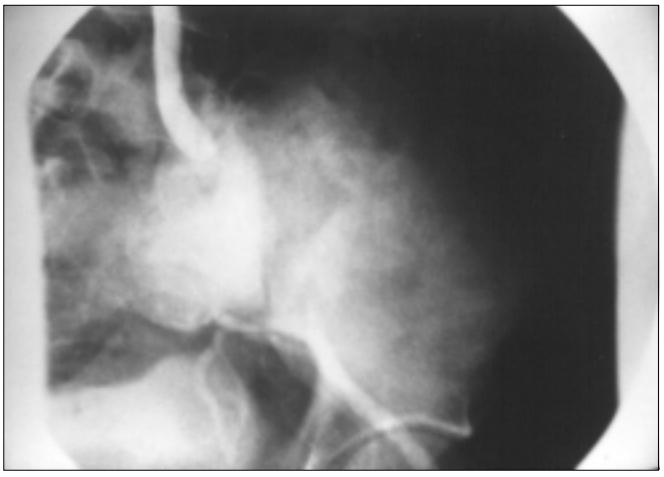

Figure 3 - Abdominal aortogram of case 2, showing an enormous pseudoaneurysm of the left common iliac artery.

aortic aneurysm. No post-mortem study has been done.

DISCUSSION

Since the publication of the first case of a ruptured and *Salmonella*[8]- infected abdominal aortic aneurysm, other reports relating aneurysms to AIDS have been published.[6,7,9] These aneurysms mainly develop in young HIV-infected patients with no signs of atherosclerotic disease, traumatic injury or any other known pathogenic factor. The two patients reported here were young (23 and 31 years old, respectively) and did not present clinical manifestations or angiographic alterations suggestive of atherosclerosis. Also, neither patient presented septicemia or endocarditis. The first patient reported treatment for pulmonary tuberculosis one year earlier. Aortic thrombus culture did not lead to the isolation of bacterial agents in either patient.

Salmonella is known to pose a high risk, *per se*, for the development of abdominal aortic infection in patients aged over 50 years.[10] Johansen and Devin reported mycotic aortic aneurysms in immunodepressed patients.[11] On the other hand, tuberculous mycotic aneurysms of both femoral arteries have been detected after vaccination with Calmette-Guérin bacillus in patients submitted to immunotherapy, suggesting that vascular tissue can present an inflammatory response to infection.[12]

Despite the publication of cases of infected atherosclerotic aneurysm,[8,13] most HIV-infected patients probably develop necrotizing vasculitis of the vascular wall followed by the formation of false aneurysms, as was the case for the present patients.[9]

In a review of 14 cases of arteritis in patients with AIDS, Calabrese et al described several pathological alterations.[14] Five cases were defined as having angiogenic immunoproliferative aspects which the authors attributed to autoimmune mechanisms. The remaining ones presented areas of intense necrotizing vasculitis with the formation of aneurysms attributable to local infection of the vessel wall or to intraluminal thrombosis. Necrotizing arteritis was characterized in the histopathological study of the popliteal artery in the second case.

Recent histopathological studies have revealed lesion, regeneration and activation of the aortic endothelium in HIV-infected patients who died of other causes, indicating a more active role of the virus in the pathogenesis and progression of the disease.[15]

Radiological examination (computed tomography or arteriography) usually characterizes the aneurysms of these patients as being of the saccular type or pseudoaneurysms. In the two patients reported here, the aneurysms were found to be saccular or pseudoaneurysms during preoperative evaluation and confirmed as pseudoaneurysms during the transoperative period.

Surgical treatment of aneurysms considered to be mycotic ideally consists of the excision of the entire infected tissue, including all the vascular tissue involved, with restoration of vascular continuity by extra-anatomical reconstruction.[16-18] However, there are reports in the literature of good results obtained with *in situ* placement of a dacron prosthesis in an aortic position instead of an extra-anatomic bypass.[19-21] The latter procedure was adopted here since neither patient showed local signs of purulent secretion during laparotomy and thrombus culture was negative. Antibiotic treatment with cefotriaxone was maintained in both patients for one week and discontinued after discharge from the hospital.

Some authors recommend the prolonged maintenance of antibiotic treatment for operated patients because of the recurrence of infection in immunodeficient subjects.[8]

Some ethical aspects should be considered in the surgical treatment of HIV-infected patients. Should restorative vascular surgery for the correction of arterial aneurysms be indicated for patients with a lethal disease? Since these are usually young patients (23 and 31 years of age in the present case), with better current perspectives of survival and probable recovery and of a return to their professional activities, our team opted for surgical treatment. This ethical question was also analyzed by Dupont et al. in 1989 and those investigators also opted for intervention when they published the first case of abdominal aortic aneurysm in a patient with AIDS.[8]

It is clear that both in general surgery and in vascular surgery the surgical team should double its precautions in view of the risk of contamination of team members (double gloves, caps, masks, protective glasses, etc.) during the intra- and postoperative period.

Finally, it may be expected that, with the increase in the number of AIDS patients in the population and their extended life expectancy, the incidence of aneurysms among these patients will increase over the next few years.[7,8]

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RESUMO

Contexto: São conhecidas várias complicações vasculares associadas à Síndrome de Imunodeficiência Adquirida (AIDS). Publicações recentes chamam à atenção sobre o desenvolvimento de aneurismas em grandes artérias em pacientes aidéticos. **Relato de Caso:** Neste relato são apresentados dois casos de pacientes (23 e 31 anos de idade) portadores de AIDS com pseudoaneurismas da aorta abdominal e artérias ilíacas comuns. Após a avaliação clínica e radiológica (arteriografia e tomografia computadorizadas), foram operados e submetidos à aneurismectomia com colocação de selo de dacron no primeiro caso e interposição de prótese aorto-ilíaca direito e femoral esquerdo no segundo. Este último desenvolveu novos aneurismas de subclávia direita e poplítea esquerda, dois meses após a operação, optando-se pela ligadura proximal do seu colo para tratar o primeiro e ressecção e interposição de veia safena interna invertida para tratar o pseudo-aneurisma de artéria poplítea. O estudo histopatológico da artéria poplítea revelou arterite necrotizante.