

CAS CLINIQUE/CASE REPORT

MYCOTIC ANEURYSM OF THE TIBIOPERONEAL TRUNK

An extremely rare localization with pseudo-phlebitis clinical presentation

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ABSTRACT : Since antibiotics have been widely used in the treatment of bacterial endocarditis, mycotic aneurysms caused by septic emboli have become extremely rare.

We report the case of a 66-year-old male patient who presented mycotic aneurysm of the right tibio-peroneal trunk two weeks after aortic and mitral valve replacement due to *Enterococcus fecalis* endocarditis. The clinical presentation simulated thrombophlebitis of the deep veins of right calf. A pulsating mass was diagnosed clinically and duplex ultrasound confirmed the diagnosis of a mycotic aneurysm of the tibio-peroneal trunk. Surgical treatment included the closure of the orifice of the aneurysm and excision of the aneurysmal sac. Arterial reconstruction was not required. Postoperative course was uneventful. No complication was observed at long-term follow-up.

This observation represents the seventh case reported in the literature of mycotic aneurysm at this localization.

INTRODUCTION

After the widespread use of aggressive antibiotic treatment for bacterial endocarditis, mycotic aneurysm secondary to septic emboli have become rare. Mycotic aneurysm can occur in both normal and abnormal arteries. Major anatomic location of these aneurysms include the aorta, the intra-cranial, superior mesenteric and femoral arteries [1]. Location of a mycotic aneurysm in an infra-popliteal position is extremely rare.

CASE REPORT

We report the case of a 66-year-old male patient who was referred to our institution from another hospital for

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Kreidy R, Hatem J. Anévrysme mycotique du tronc tibio-péronier : Une localisation extrêmement rare avec une présentation clinique simulant une thrombophlébite. *J Méd Lib* 2006 ; 54 (1) : 50-53.

RÉSUMÉ : Depuis l'utilisation généralisée des antibiotiques dans le traitement de l'endocardite bactérienne, les anévrysmes mycotiques causés par des embolies septiques sont devenus extrêmement rares.

Nous exposons le cas d'un patient âgé de 66 ans qui a présenté un anévrysme mycotique du tronc tibio-péronier droit deux semaines après un remplacement valvulaire aortique et mitral secondaire à une endocardite à *Enterococcus fecalis*. La présentation clinique a simulé une thrombophlébite surale droite. Une masse pulsatile a été palpée cliniquement et l'échographie Doppler a confirmé le diagnostic d'un anévrysme mycotique du tronc tibio-péronier droit. Le traitement chirurgical a consisté en une fermeture de l'orifice de l'anévrysme et une excision du sac anévrysmal. Une reconstruction artérielle n'était pas nécessaire. L'évolution postopératoire fut favorable. Aucune complication n'a été observée à long terme.

Cette observation représente le 7^e cas publié dans la littérature d'anévrysme mycotique à cette localisation.

fatigue, anorexia, cachexia and rest dyspnea. The patient had two months ago a prolonged fever with mitral systolic murmur. *Enterococcus fecalis* was isolated from the blood. He received Teicloplamin and Amikacin. Fever disappeared one month later, but the patient developed renal failure and was still complaining of fatigue and rest dyspnea. He presented on admission symptoms and signs of severe right and left heart failure with pulmonary artery hypertension related to bacterial endocarditis of the mitral valve, and severe mitral regurgitation confirmed on echocardiography. The patient had also an aortic valve regurgitation and he underwent open heart surgery for aortic and mitral valve replacement. Pathological examination showed an active chronic valvulitis of the mitral valve which, associated with clinical signs, was compatible with a chronic infective endocarditis. Culture of the mitral valve was negative. One week after open heart surgery, the patient developed right calf pain with edema simulating a thrombophlebitis clinical presentation. The calf was tense and painful. Close examination of the upper part of the calf revealed a pulsating mass with a slight systolic murmur at its level. Dorsalis pedis pulse was normal but the posterior tibial pulse was moderately decreased. Toes extension

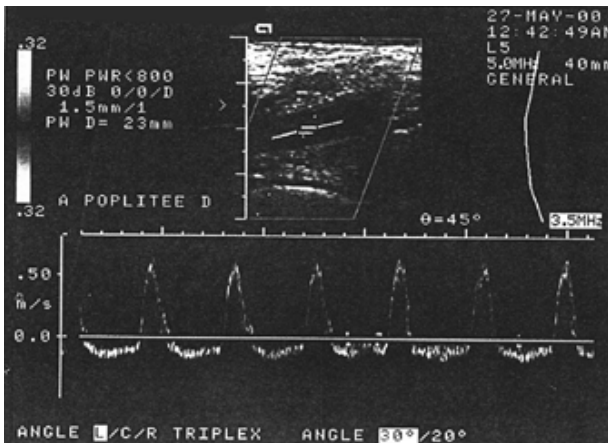


FIGURE 1
Duplex ultrasound of the right popliteal artery.

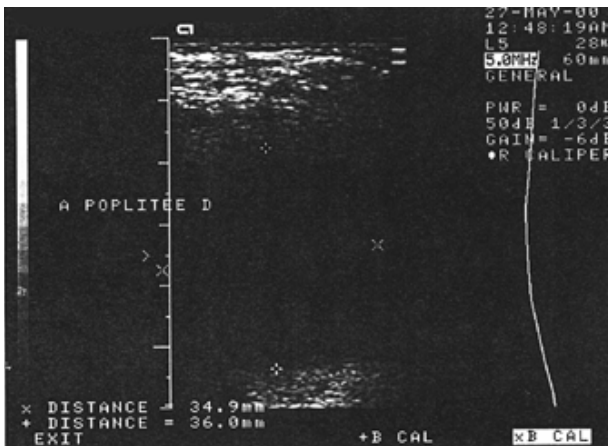


FIGURE 2
Duplex ultrasound showing the aneurysm of the right tibioperoneal artery.

was weak because of the compression of the tibial nerve by the aneurysmal sac. Color flow duplex ultrasound showed an important aneurysm of the right tibioperoneal trunk (3.5 x 3.6 cm) with compression of the adjacent veins (Fig. 1, 2). Dorsalis pedis and posterior tibial arteries had a good caliber with however a moderate decrease of their flow distally (Fig. 3, 4). Cerebral CT scan did not reveal any possible cerebral intracranial concomitant mycotic aneurysm. Since creatinine level was high, arteriogram was not performed.

Surgery confirmed the presence of a big aneurysm (5 x 6 cm) of the right tibioperoneal trunk, 1.5 cm below the popliteal bifurcation. Surrounding tissues were inflammatory and infiltrated by edema. Unusual perianeurysmal adhesions were observed. The wall of the aneurysm was very thin. The aneurysmal sac was excised and the orifices of the aneurysm were closed. Arterial reconstruction was not required because a good pulse was present at the level of the distal posterior tibial artery. Pathological examination of the aneurysmal sac showed a thin wall with necrotic lesions and infiltration of in-

flammatory cells. Culture of the aneurysmal wall was negative. This was most probably secondary to the sterilization of the aneurysm with long-term antibiotic treatment. Postoperative course was uneventful. Calf pain disappeared and the deficit of toes extension was completely reversible. No complication was observed at short term follow-up and on the last control, six years after surgery.

DISCUSSION

Mycotic aneurysms develop when septic emboli of cardiac origin lodge in the lumen or vasa vasorum of the peripheral arteries [2]. This clinical and pathological entity is quite different from microbial arteritis, infection of existing aneurysm and posttraumatic infected false aneurysm. The incidence of mycotic aneurysms both in absolute terms and as a percentage of infected aneurysms has decreased with time [3-5]. Because mycotic aneurysms develop as a complication of endocarditis, the organisms isolated from arterial blood or cardiac valve vegetations of endocarditis are responsible for the

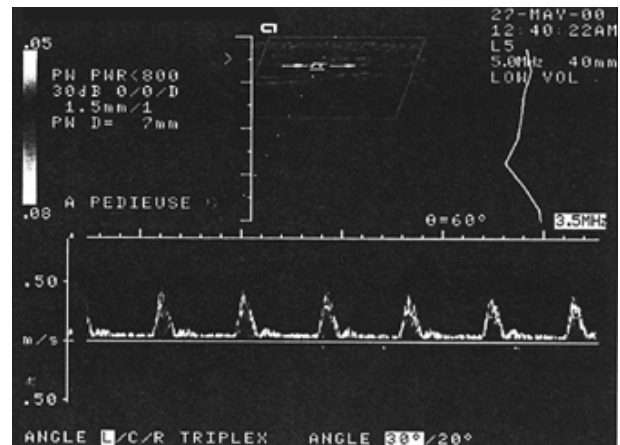


FIGURE 3
Duplex ultrasound of the right dorsalis pedis artery.

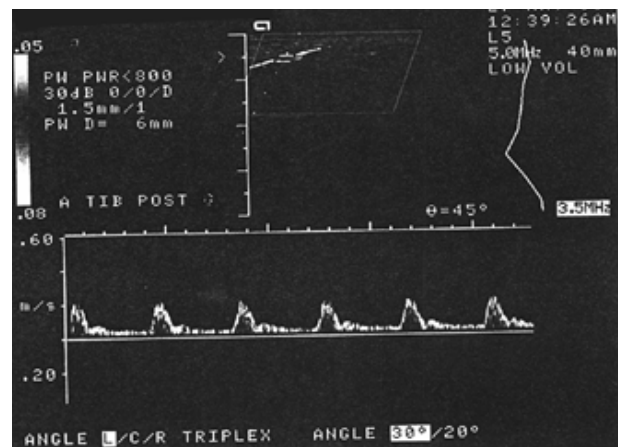


FIGURE 4
Duplex ultrasound of the right posterior tibial artery.

TABLE I
REPORTED CASES OF MYCOTIC ANEURYSM OF THE TIBIOPERONEAL TRUNK

AUTHORS	Journal	Particularities
AKERS D.L. Jr et al.	<i>J Vasc Surg</i> 1992 ; 16 : 71-74	First case reported. Arterial reconstruction.
MURASHITA T. et al.	<i>Int Angiol</i> 1997 ; 16 : 176-179	Bilateral location. No arterial reconstruction.
MCKEE M. A. et al.	<i>Ann Vasc Surg</i> 1999 ; 13 : 188-190	Pediatric case. Pathogen : <i>Brucella canis</i> . No arterial reconstruction.
LACOMBE M.	<i>Chirurgie</i> 1999 ; 124 : 649-654	After renal transplantation. No arterial reconstruction.
ALEXOPOULOU E. et al.	<i>J Int Radiol</i> 2000 ; 14 : 157-159	Ruptured. Presented as a compartment syndrome.
LARENA-AVELLANEDA A. et al.	<i>Ann Vasc Surg</i> 2004 ; 18 (11) : 30-33	Pathogen : <i>Candida albicans</i> . Endovascular treatment.

mycotic aneurysm constitution. Many organisms were cultured from infected aneurysms and include *Staphylococcus (aureus, epidermidis)* and *Streptococcus (viridans, fecalis, etc.)* species [4].

Even though mycotic aneurysms may occur in multiple sites in a given patient, certain anatomic locations predominate, namely the aorta, the intracranial, superior mesenteric and femoral arteries [1, 4]. Mycotic aneurysm is rarely observed at the level of distal peripheral arteries. Twenty-five cases of mycotic aneurysm of popliteal artery have been reported in the literature [6-17]. Infrapopliteal location of mycotic aneurysm is extremely rare. Only six cases of mycotic aneurysms of the tibioperoneal trunk have been reported in the international literature [17-22] (Table I). In one observation the aneurysm was bilateral [20]. In another one, the aneurysm occurred as a complication of renal transplantation [21]. True atherosclerotic aneurysms of the tibioperoneal trunk have been also rarely observed [23-26].

Confirmation of the infectious origin of the aneurysmal lesions depends on many conditions. Confirmation factors include the occurrence of bacterial endocarditis, septicemia with positive blood culture, direct isolation or aerobic, anaerobic bacteria and fungi culture of the same pathogen in the aneurysmal wall unless the aneurysm has been sterilized by long-term antibiotic treatment. Presumptive factors include the absence of a preexisting aneurysm of the peripheral arteries, the presence of an inflammatory perianeurysmal reaction, the observation on pathological examination, when the culture is negative, of inflammatory cells with sometimes necrotic lesions and the absence of any septic complication of a previous local surgery [21]. However, neither negative intra-operative gram stain, nor negative blood culture are sufficiently sensitive to exclude the diagnosis of infected aneurysm [27].

The clinical presentation of mycotic aneurysm of the tibioperoneal trunk may simulate deep calf veins thrombosis. The contribution of color flow duplex ultrasound in the diagnosis of this particular location is very helpful [28]. It permits to rule out thrombophlebitis and confirms the diagnosis of tibioperoneal aneurysm. Arteriogram, either conventional or with digital subtraction is essential for the assessment of patients with suspicion of infected aneurysm. Angiographic criteria for infection in an aneurysm

are saccular aneurysm in a normal appearing vessel, multilobulated and eccentric aneurysm with a relatively narrow neck. However, an infected aneurysm may not exhibit any angiographic characteristics indicative of infection [29]. Contrast-enhanced computed tomography is of value in determining etiology and assessing the presence or absence of aneurysmal rupture [30]. Magnetic resonance imaging may prove helpful in certain locations and in whom radiography or contrast media are contraindicated.

Although organism specific therapy is an essential element of successful surgical management of an infected aneurysm, patient prognosis and survival depends on prompt diagnosis and operation. Not recognizing the diagnosis of a mycotic aneurysm and treating the patient with anticoagulation for a false diagnosis of thrombophlebitis may lead to the rupture of the aneurysm which makes surgical treatment complex and the prognosis poor. Six general principles apply in the operative management of infected aneurysms :

1. Control of haemorrhage.
2. Confirmation of the diagnosis.
3. Operative control of sepsis including aneurysm resection, ligation of healthy artery, wide debridement, antibiotic irrigation and drainage when needed.
4. Thorough postoperative wound care.
5. Long-term antibiotic treatment.
6. Arterial reconstruction of vital arteries through uninfected tissues with autologous tissue when required.

Arterial reconstruction following resection of mycotic aneurysm of the tibioperoneal trunk is not always required since a good pulse and flow can be often observed at the level of the distal posterior tibial artery in a retrograde direction through the plantar arch. This reconstruction was not necessary neither in our case nor in four other published cases [19-21]. When sepsis is severe and uncontrolled and when infected arteries are not vital, revascularization may pose an unnecessary and potentially lethal risk of graft sepsis and should be undertaken with caution.

CONCLUSION

Tibioperoneal trunk is an extremely rare location of the mycotic aneurysm. Diagnosis must be suspected in case

of bacterial endocarditis immunosuppression and renal transplantation. Clinical presentation may simulate thrombophlebitis. Prompt diagnosis and urgent surgery prevent rupture. Long-term antibiotic treatment is required. Only surgery can achieve cure when arterial revascularization is required. However, endovascular treatment with obliteration of the aneurysmal sac by embolization using coils is a recent and promising procedure when there is no need for arterial revascularization [17].

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ام دم فطرية للجذع الظنبوبي الشظوي

توضع نادر الحدوث مع التهاب الوريد الزائف. مشاهدة سريرية.

موجز: منذ الإستعمال الواسع للمضادات الحيوية لمعالجة التهاب شغاف القلب الجرثومي فإن أمهات الدم الفطرية المسببة عن صمات (جلطات) انتانية أصبحت نادرة الحدوث.

نشير إلى حالة مريض عمره ٦٦ عاماً حدث عنده ام دم فطرية للجذع الظنبوبي الشظوي الأيمن بعد أسبوعين من وضع صمام أبهري وإكليلي تالياً لالتهاب شغاف القلب بالمكورات المعوية البرازية. كان المشهد السريري مشابهاً لالتهاب الوريد الخثري للساق اليمنى وكتلة نابضة مجسوسة سريرياً، وبما فوق الصوت - دوبلر تأكد تشخيص ام دم فطرية للجذع الظنبوبي الشظوي الأيمن. تم العلاج الجراحي بإغلاق فتحة ام الدم واستئصال كيستها. لم يكن ضرورياً إعادة بنيان الشريان. كانت توالي الجراحة جيّدة ولم تلاحظ اختلاطات على المدى الطويل. هذه المشاهدة هي السابعة المذكورة مع المنشورات المتعلقة بأم دم فطرية بهذا الموقع.