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Article en anglais

Mycotic aneurysms involving tibioperoneal trunks caused by infective endocarditis with staphylococcus: a case report and review of the literature

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Summary:

Mycotic aneurysms involving tibioperoneal trunk arteries are very rare. Ruptured aneurysms are particularly uncommon and represent a surgical or endovascular emergency. We describe a case of 27-year-old woman who presented with a 4 cm ruptured aneurysm of the tibioperoneal trunk 20 days after an episode of bacterial endocarditis for *Staphylococcus aureus*. Our surgical approach included resection of the aneurysm, debridement of infectious tissue and arterial reconstruction with tibiofemoral bypass followed by the aortic valve surgery .

Keywords: Mycotic aneurysm; Tibioperoneal trunk, *Staphylococcus aureus*, Infective endocarditis.

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Introduction

Infective endocarditis, whose incidence has not declined significantly in recent years, is still a serious disease, the mortality rate from all forms, remains close to 15 to 20 % [1]. Its complications are frequent, especially heart failure, cardiac abscesses, systemic embolism and the infectious aneurysm, the occurrence of which remains unpredictable. Mycotic aneurysm (MA) is a focal dilatation of an infected arterial wall. This uncommon disease follows an aggressive, unpredictable clinical course with significant mortality and presents unique diagnostic and therapeutic challenges. Early diagnosis and prompt intervention is essential for optimal management of MA [2]. Given its low prevalence, the diagnosis of MA requires a high index of suspicion. Inappropriate surgical intervention

without accurate diagnosis of infection can also result in recurrent infection at the surgical site, which can lead to significant morbidity and mortality [3].

Case report

A 27-year-old woman, without particular history, was admitted at the department of internal medicine for the exploration of a febrile syndrome and inflammatory arthritis mono right ankle (concept of tooth extraction 01 months ago). The transthoracic echocardiography completed by transoesophageal echocardiography made in this connection revealed "a mobile pendant vegetation on the right coronary sigmoid pedicle measuring 16/07 mm with aortic regurgitation grade III on bicuspid valve" and the diagnosis of infective endocarditis was retained. At that time, the blood

cultures with germ culture were positive for *Staphylococcus aureus*, sensitive to Cefotaxime, Vancomycin, Gentamycin and Rifampicin. Hence its transfer on cardiology division for the therapeutic management: dual synergistic antibiotics based on Cefotaxime, 2 grams every 6 hours by IV and Gentamycin at dose of 3mg/kg/day has been started. The hospital course was marked by obtaining the afebrile after a week of antibiotic treatment. On the 20th day of admission, the patient developed a late allergy to Cefotaxime type of generalized petechial purpura with gingivorrhagia and elevated temperature.

A blood count found a normal platelet count at 230000/mm³, a 9.4 × 10⁹/l white blood cell count and a correct hemostasis test.

Hence the diagnosis of immunological purpura induced by antibiotics has been made. Therefore, Cefotaxime was stopped and replaced by Vancomycin where the dose was adjusted according to the Vancomycinémie.

The same day, the patient described intense pain in the right leg; evaluation included Doppler (Figure 1) with tomography angiogram (Figure 2) revealed an aneurysmal dilatation measuring 30 mm wide, 36 mm thick and 40 mm high, with irregular contours, probably ulcerated, developed at the expense of just tibioperoneal trunk without the emergence collar with interposition distal portion of the popliteal artery. His leg was cool with normal motor function but diminished sensation. A femoral pulse was present.

On the 24th day, appears acute renal failure with a creatinine clearance 30ml / min (several assumptions: the injection of the contrast medium, glomerular disease, immune complex of Löhleins, myocardial and / or abscesses, drug nephrotoxicity) → parenteral rehydration was introduced and renal function was recovered after 10 days. On the 39th day, the patient describes an accentuation of the right calf pain in connection with an increase in the size of the aneurysm that has thrombosed.

The patient was emergently conveyed to the operating room. Exploration found a total rupture of the tibioperoneal trunk. There was organized thrombus without evidence of purulence. We decided to realize a posterior tibiofemoral bypass and closure of various incisions on two Redon drains, the first at the proximal anastomosis and the second at the distal anastomosis. The thrombus was sent for cytobacteriological examination. The postoperative course was uneventful and other laboratory data immediately normalised. Follow-up CT angiogram shows good passage of the graft, without recurrence or ischaemia and MA formation.

Ten days later, she underwent aortic valve replacement with mechanic valve (Figure 3).



Figure 1: Doppler ultrasound of the right lower limb: thrombosed aneurysm tibioperoneal.

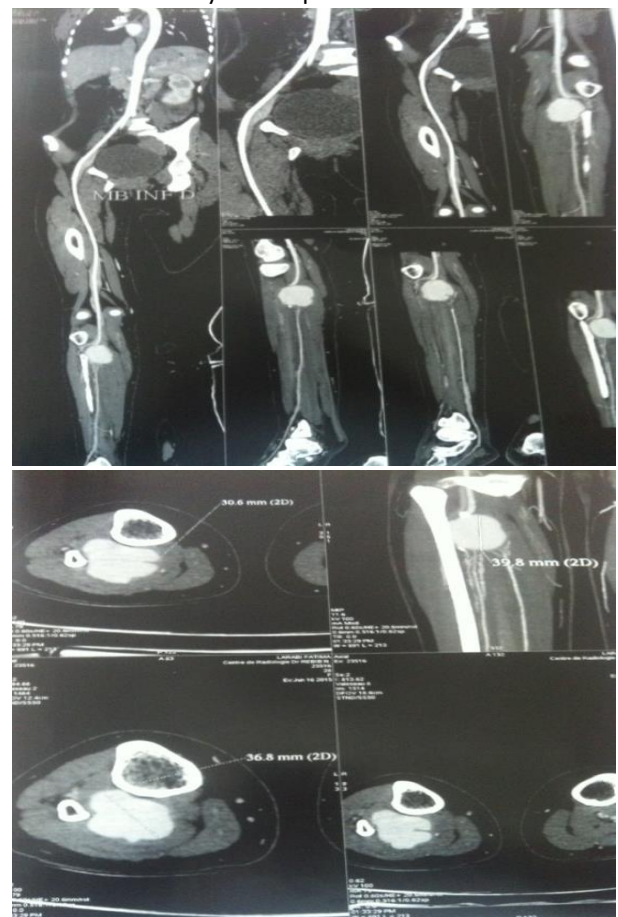


Figure 2: Computed tomography after infective endocarditis shows unilateral tibioperoneal trunk aneurysm.

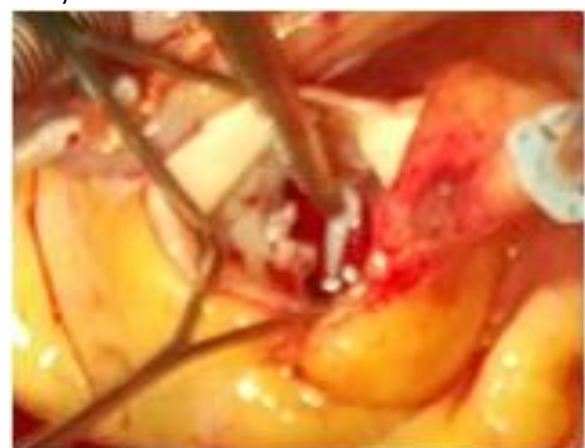


Figure 3: Aortic valve replacement surgery.

Discussion

Morbidity and mortality related to mycotic aneurysms, has dramatically decreased with advances for antimicrobial therapy [4]. Currently, the incidence of these aneurysms following an episode of endocarditis is quite rare and their location is dependent upon the peripheral lodgement site of mycotic emboli [5].

Sir William Osler described the first infected aneurysm of the aorta complicating bacterial endocarditis [6]. Mycotic aneurysms of the arteries of the members are very rare (0.7% to 1.3% of cases) [7.] In 1992, Akers et al [8] reported the first case of mycotic aneurysm involving tibioperoneal trunk. Subsequently, in English literature, several reports have been published, including a bilateral case without arterial reconstruction. In 2004, Larena-Avellaneda et al [9] described a bilateral case that underwent interposition of saphenous vein graft (SVG) and embolization with coils on each side. Cases of mycotic aneurysm caused by *Staphylococcus Aureus* are exceptional. Bell RE et al [10] reported a case of an infected thoracic pseudoaneurysm caused by methicillin-resistant *Staphylococcus Aureus*. In other words, cases involving tibiopéroniers trunks with complete arterial reconstruction are extremely rare. Recent advances in endovascular intervention have continued to push the boundaries of vascular surgery, and nowadays, it is a part of the standard approach to aneurysmal disease, including the popliteal artery. It has also been used in emergency cases with ruptured aneurysms and is proving to be an important adjunct to open surgery, particularly in unfit patients, even in the presence of sepsis [11]. Open surgical repair has been the preferred approach. However, there is no consensus on the best way to maintain limb circulation, and the decision is usually individualized according to the patient's general health and the severity of local and systemic sepsis. Ideally, an extra-anatomic vein graft bypass, avoiding the infected field, should be used but this cannot be achieved in all cases [12].

Conclusion

Ruptured mycotic aneurysm of tibial-peroneal trunk arising from bacterial endocarditis are rare. High index of suspicion is crucial in early surgical management. Management of mycotic aneurysm device includes the use of antibiotics in the beginning, which should be based on appropriate guidelines [13] and / or complete excision of infected tissue. Therefore, the arterial reconstruction is not always necessary for all patients and indication for surgery depends on the peripheral arterial circulation.

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