

**BRACHIAL ARTERY PSEUDOANEURYSM REVEALING INFECTIVE  
ENDOCARDITIS: ABOUT A CASE**

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**SUMMARY**

The vascular complications of infective endocarditis described by William Osler in 1885, namely septic aneurysms, are classic attacks that have become rare nowadays. We report the case of a 42-year-old subject, in whom Osler's endocarditis was revealed by a surgically treated pseudoaneurysm of the brachial artery.

**1. INTRODUCTION**

Septic arterial aneurysms are a rare complication, reflecting invasion of the arterial wall by germs originating from an endocardial infectious site. All arterial territories can be affected: cerebral arteries, aorta, digestive arteries, peripheral arteries. In this context, we report the case of a patient presenting with a septic pseudoaneurysm located at the level of the left brachial artery revealing an infective endocarditis.

**2. Comment**

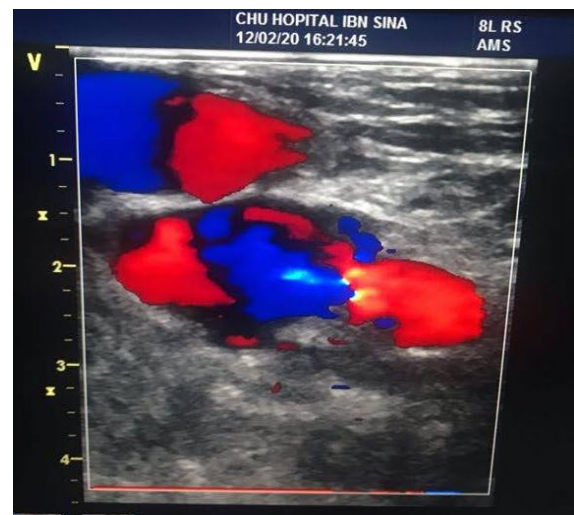
This is a 42-year-old Mr. ML, with a history of recurrent episodes of angina that were poorly treated in childhood. The patient was admitted to the emergency room for a beating mass localized in the left arm next to the course of the brachial artery.

The examination on admission found a stable patient, with a throbbing mass without adjacent signs of inflammation, with pain on palpation.

Vascular examination found radial and ulnar pulses present and symmetrical.

The patient's general examination was unremarkable except for a low grade fever of 37.9.

The patient underwent an arterial echodoppler showing a circulating false aneurysm of the left brachial artery. (Fig1)



**Fig. 1: echo-doppler showing the arterial pseudoaneurysm.**

The patient was admitted to the emergency operating room for surgical exploration with flattening and repair of the brachial artery.



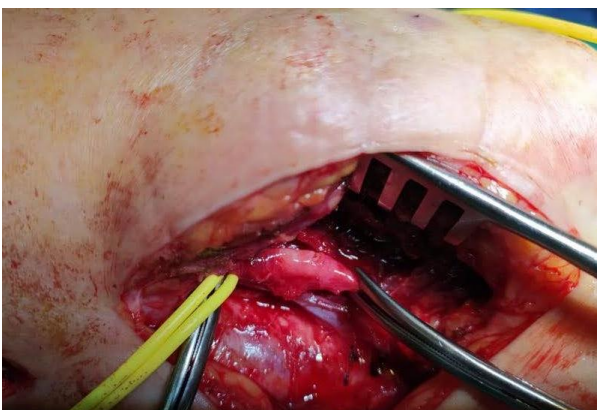
**Fig. 2:** Image showing the hematoma caused by the pseudoaneurysm.

The entire left upper limb was included in the operating field.

Access to the brachial artery above the bend of the elbow was performed with dissection and control of the latter upstream and downstream of the mass.

The entire hematoma was evacuated (Fig 2), and a bacteriological sample was taken.

We subsequently discovered the presence of a spade in the wall of the brachial artery (Fig3), which was repaired with Prolene.<sup>[7-0]</sup>



**Fig. 3:** image showing the arterial breach after dissection and control

The patient underwent post-op trans-thoracic Doppler as part of the etiological work-up showing infective

endocarditis with vegetation hanging from the large mitral valve.

The biological assessment showed an inflammatory syndrome, polymorphonuclear hyperleukocytosis. Blood cultures were also requested and will come back negative.

### 3. DISCUSSION

Vascular complication of infective endocarditis, septic aneurysm is a classic attack but has become rare nowadays. The decrease in its incidence is closely linked to the use of antibiotic treatment, to the improvement of methods of isolation and identification of germs and above all to the development of cardiac surgery which allows a satisfactory cure for valvular damage that is a source of infection. The frequency of this complication varies according to the series between 1.2% and 5.4%.<sup>[1]</sup>

The physiopathological mechanism incriminated in the genesis of the septic aneurysm is above all the embolization in the vasa-vasorum of infected debris coming from the endocardial infectious focus (vegetation). The resulting parietal ischemia results in a degeneration of the muscular elements of the wall, hence an ectasia of the artery,<sup>[2]</sup> it is therefore a false aneurysm. Inoculation of an intimal lesion complicating an atherosclerotic plaque is also possible during bacteremia. It is observed especially in the elderly. In our practice, this scenario is much rarer, because the majority of endocarditis observed occur on rheumatic valvulopathies, therefore mainly affecting young subjects as reported in our observation.

Septic aneurysms can be located in any vascular territory, however as far as peripheral locations are concerned, proximal attacks seem to be more frequent. In Brudon's series, out of 21 cases of septic aneurysms, 9 ilio-femoral locations and 8 popliteal locations are described.<sup>[2]</sup> Asker et al have also reported the case of septic aneurysms in the posterior tibial artery.<sup>[4]</sup> The same location was reported by Menanteau et al.<sup>[5]</sup> As an indication, cerebral localization varies between 19 and 24%.<sup>[3]</sup> The table below shows the different sites of septic aneurysms in order of frequency.<sup>[6]</sup>

Table: The different locations of septic aneurysms classified by order of frequency.<sup>[7]</sup>

- 1- Femoral involvement
- 2- Abdominal aorta
- 3- Superior mesenteric
- 4- Upper members
- 5- Iliac arteries

The clinical diagnosis is of variable difficulty, in fact, if 90% of the peripheral aneurysms are palpable, the aorto-iliac aneurysms can escape the clinical examination and will only be discovered during a screening echo-Doppler.

On the bacteriological level, the responsible germs are mainly gram positive Cocci. In the series by Magilligan and Quinn,<sup>[7]</sup> the germs identified during septic aneurysms complicating native valve endocarditis are *Streptococcus Viridans* (22%), *Staphylococcus aureus* (20%), *Streptococcus faecalis* (14%) and *Staphylococcus epidermidis* (11%).

Among the paraclinical examinations, vascular echo-Doppler occupies an important place. Non-invasive examination, it allows to locate the seat of the aneurysm, to determine its size, its type (sacciform or fusiform) and its content. Certain characteristics must be well specified, in particular the sacciform aspect with a relatively narrow neck, the presence of heterogeneity of the aneurysmal contents,<sup>[8]</sup> and above all the multiplicity of aneurysmal locations. Ultrasound will also make it possible to visualize a possible intra-aneurysmal thrombus which frequently complicates these septic aneurysms, and which, in the case of a circumferential thrombus, can go unnoticed on angiography and underestimate the real size of the aneurysm.<sup>[9]</sup>

Nevertheless, arteriography remains the reference examination to make the preoperative assessment necessary for the choice of the technicality of the surgical gesture.

The treatment of septic aneurysms complicating infective endocarditis is part of a management combining the cure of valvular disease, the starting point of septic emboli, and the treatment of vascular ectasia which has its own evolutionary aspect. Antibiotic therapy adapted to the germ found in blood cultures is essential. It allows sterilization of the vegetations thus avoiding bacteremia and reinfection.

The general principle of surgical treatment is based on the exclusion of the aneurysm, i.e. its ligation-resection with revascularization of the downstream territory by a graft whose anastomoses will be done at a distance from the infected zone, this is to reduce the risk of suture failure. The type of revascularization will depend on the territory affected and the degree of collateral circulation.<sup>[6]</sup>

The materials recommended for peripheral revascularization are primarily venous grafts (internal saphenous vein) or expanded poly-tetrafluoro-ethylene (PTFE) prostheses which seem to resist infection better than Dacron prostheses.<sup>[3]</sup>

Early treatment of septic aneurysms will prevent the classic complications of rupture and acute thrombosis of aneurysms, but also infectious recurrence from an unsterilized aneurysmal site during treatment of the initial episode of endocarditis.

In the case of these peripheral aneurysms, the rupture causes the death of approximately 25% of the

patients.<sup>[10,11]</sup> and participates with the acute thrombosis in a significant rate of amputations.

#### 4. CONCLUSION

Septic aneurysms are rare but serious because they involve both vital and functional prognosis. This prognosis depends on the virulence of the germ, but also on the precocity of the diagnosis and the therapeutic management of these aneurysms. Ultrasonography-Doppler is the reference non-invasive examination for the detection and evaluation of arterial complications in patients treated for infective endocarditis.

Surgical treatment must be rapid in order to avoid complications which are often serious.

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