

Rheumatic Polyarthritis Revealing Infectious Endocarditis: A Case Report

**N. Mahoungou-Mackonia^{1*}, M. El Mousaid¹, A. El Amraoui¹, A. Fadoul¹,
Harouna Seydou¹, Brahim Nassour¹, Ovaga Esther¹, I. Nouamou¹, S. Arous¹,
G. Bennouna¹, A. Drighil¹, L. Azzouzi¹ and R. Habbal¹**

¹*Department of Cardiology, IBN ROCHD University Hospital, Casablanca, Morocco.*

Authors' contributions

This work was carried out in collaboration between all the authors. All authors have read and approved the final manuscript.

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Case Study

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ABSTRACT

Infectious endocarditis is an infrequent but serious disease with multiple complications, as reported by the European society of cardiology in 2015. Rheumatic manifestations are some of the frequently encountered but rarely described complications. Even less described is the polyarticular involvement, which is rarely encountered in infective endocarditis. It is in this order that we report the case of a 34 years old patient followed for one month in the internal medicine department for rheumatoid polyarthritis, a diagnosis established due to polyarthritis, fever and positive anti-CCP. The patient underwent methotrexate and corticoid treatment. The evolution under treatment was marked by the persistence of the fever and the appearance of a drop in visual acuity, thus making the object of a transthoracic ultrasound scan. The ultrasound results showed a pulsatile and mobile hyperechoic image measuring 19x9 mm on the side of the large mitral valve associated with severe mitral insufficiency due to the pillar rupture of the small mitral valve. Three series of 30-minute blood cultures were performed, showing streptococcus constellatus. An assessment of the extension, in particular OCT-angiography showed macular hemorrhage. The circulating hypo complement objectively determined by C3 and C4 dosage, associated with positive anti-CCP allowed the patient to be treated for a rheumatological manifestation of infectious endocarditis. Initially the patient was treated with specific antibiotic therapy, followed by mitral valve replacement. After 2 months, the

*Corresponding author: E-mail: maschellmahoungou@gmail.com;

clinical picture improved. The rheumatic manifestations of infectious endocarditis are due to the antibody response to the infectious agent at the origin of the tissue lesions linked either to the deposition of preformed immune complexes, or to the interaction of antigens deposited in the tissues with the antibody-complement complex. Any unexplained rheumatological symptoms, accompanied by fever or a change in the general state of health must be reported.

Keywords: Rheumatoid arthritis; infectious endocarditis; health, antibody.

1. INTRODUCTION

The European Society of Cardiology in 2015 defines infective endocarditis as an infection of one or more heart valves or of the parietal endocardium by a micro-organism, most often a bacterium. The epidemiology of infective endocarditis has changed in recent years. As a result of this change, staphylococci are now the first germ responsible for this pathology, ahead of oral streptococci. Infectious endocarditis is an uncommon (30 cases per million inhabitants per year) but serious [1], disease with multiple complications. Rheumatic manifestations are part of these complications. There is controversy about their incidence, perhaps because of the small number of series describing the frequency and type of manifestations, especially the lack of uniform criteria used for the diagnosis of infectious endocarditis [2]. These manifestations are very diverse and include arthralgia, rachialgia, inflammatory or infectious arthritis, spondylodiscitis, osteitis, myalgia, tenosynovitis and bursitis [3]. Septic arthritis is rare and potentially fatal [4].

With this in mind, we report the case of rheumatoid arthritis, which has proved to be a complication of infectious endocarditis.

2. CASE REPORT

We report the case of a 34 years old patient monitored in the internal medicine department for recently discovered rheumatoid arthritis, with a painful swelling of the ankles, toes, wrists and hands symmetrically with a standard X-ray of the wrist and ankle within the normal limit, all associated with a fever and a positive anti-CCP antibody level of 15.01 IU/ml. He was put on methotrexate and corticosteroids. One month after the treatment, the evolution was marked by the persistence of the fever, the decrease in visual acuity and the appearance of a erythematous Janeway erythematous cupboard in the thenar eminence. A transthoracic ultrasound scan was requested showing a pulsatile and mobile hyperechoic image facing

the atrial side of the large mitral valve (LVM) measuring 19x9 mm in relation to vegetation, associated with severe off-centre mitral insufficiency due to possible rupture of the pillar of the small mitral valve, flowing back into the pulmonary veins. The patient was hospitalised in the cardiology department for infectious endocarditis. An electrocardiogram was performed and all parameters were within the normal range. An inflammatory biological assessment of orientation and etiology was requested, in particular: a blood count (CBC), which revealed a hyperleukocytosis at 16780 mm³ with a predominantly neutrophilic count at 15610 mm³; a very high C-reactive protein (CRP) at 105 mg/l; an accelerated sedimentation rate (SV) at 104 mm in the first hour; a procalcitonin level at 5ng/ml. Three series of blood cultures, 30 minutes apart, were carried out in relation to streptococcus constellatus. An impact assessment was carried out including a normal urine strip as well as the rheumatoid factors. Complement fractions decreased, notably C3 at 0.53 g/l and C4 at 0.02 g/l. A normal cerebral and thoraco-abdomino-pelvic CT scan. OCT- angiography revealed a macular haemorrhage. The patient was treated for a definite endocarditis with streptococcus constellatus of the native mitral valve with rheumatological manifestation, initially with tri-antibiotherapy with vancomycin 2 g/day, ceftriaxone 2 g/day and levofloxacin 500 mg/day for 6 weeks with discontinuation of corticosteroids and methotrexate. Afterwards a mitral valve replacement was performed with continued antibiotic therapy for 2 weeks. The evolution was favorable, marked by the disappearance of fever and arthralgia and an improvement in visual acuity.

3. DISCUSSION

Endocarditis is an infection of the valvular endocardium. There are two types of endocarditis: infectious and non-infectious. The group of non-infectious endocarditis, also called inflammatory, is rare [5]. It represents the 4th cause of valvulopathies behind degenerative,

infectious and rheumatic causes. Non-infectious endocarditis related to rheumatoid arthritis represents barely 10% of cases in a series of studies conducted by A. Le Bot and collaborator. Rheumatoid polyarthritis leads to endocardial damage with little symptomatology and immunological damage in various organs, in particular: cerebral (ischaemic or haemorrhagic stroke), renal, splenic, mesenteric, myocardial, pulmonary or acute ischaemia of the lower limbs [5]. There is an inflammatory reaction with a positive immunological assessment, in particular: rheumatoid factors present in 70% to 80% of cases, the absence of which in no way invalidates the diagnosis. Specific anti-CCP in 95-99% [6]; transthoracic ultrasound and transesophageal ultrasound show less severe vegetations than in infective endocarditis on repeatedly negative blood cultures. The evolution is unfavourable under antibiotic therapy [5], requiring etiological treatment.

Our patient showed a polyarthritis associated with fever all in the context of positive anti-CCP which is specific to rheumatoid arthritis. However, our patient had an unfavourable evolution under treatment with methotrexate and corticosteroids for a period of 1 month. This may have been due to a misdiagnosis. The three series of blood cultures positive for *Streptococcus constellatus* confirm the diagnosis of infectious endocarditis and invalidate the diagnosis of non-infectious endocarditis. Macular haemorrhage, hypocomplementemia associated

with positive anti-CCPs direct us towards a rheumatic entity of infectious endocarditis. The virulence of the endocarditis in our patient causing a severe mitral insufficiency by rupture of the pillars of the small mitral valve and above all a favorable evolution under antibiotic therapy reinforce the arguments for the rheumatic manifestations of infectious endocarditis.

Infectious authors [3]. The rheumatic manifestations are part of the complications frequently observed during infectious endocarditis but rarely described [3]. This can be explained by the fact that infectious endocarditis is infrequent in developed countries. The incidence in France is estimated at 22.4 cases/million inhabitants and is not significantly different from that calculated in other countries [3]. The frequency of rheumatic manifestations in literature ranges from 19-44% of cases in the predominantly male patients, with an average age of 32 years reported in the study by Meyers and all in 1977. These data from the literature support our diagnosis of rheumatic disease of infectious endocarditis. Joint manifestations may precede the diagnosis of infectious endocarditis by several weeks or even months [2,7,8]. Peripheral arthritis represents 20-50% with a progressive onset. The affection is often mono, oligoarticular and rarely polyarticular, affecting the small and large joints of the limbs, including the proximal and interphalangeal joints of the fingers and toes [3], suggesting the diagnosis of rheumatoid arthritis. The rheumatic

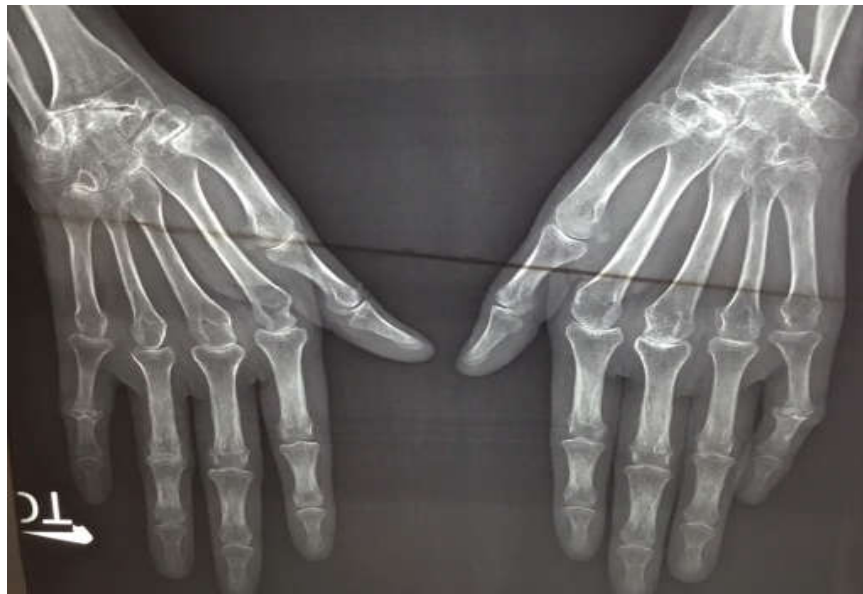


Fig. 1. Standard X-ray of the hand in this 34-year-old patient with rheumatic manifestation of endocarditis

manifestations of infectious endocarditis may be due to the antibody response to the infectious agent at the origin of the tissue lesions linked either to the deposition of preformed immune complexes, or to the interaction of antigens deposited in the tissues with the antibody-supplement complex [3]. Imaging, particularly standard X-rays and joint computed tomography (CT) scans, show no abnormalities [3]. The diagnosis is based on positive blood cultures, especially in favor of staphylococcus associated with vegetations, abscesses, tears or valve elongations visualized by transthoracic ultrasound, transesophageal ultrasound and or cardiac CT scan. Finally, the treatment is based on antibiotic therapy adapted

to the germs with a treatment duration of 4 weeks on the native valve or more [2,7-9]. endocarditis with rheumatic manifestations is an entity that was first described by French.

These data from the literature corroborate our observation in every respect except for one difference: in our case the blood cultures were in favor of a streptococcus constellatus, frequently found in patients without rheumatic characteristics [2]. However, the evolution was favorable under antibiotic triage and valve replacement after 2 months, confirming the diagnosis of infectious endocarditis with a polyarticular component.

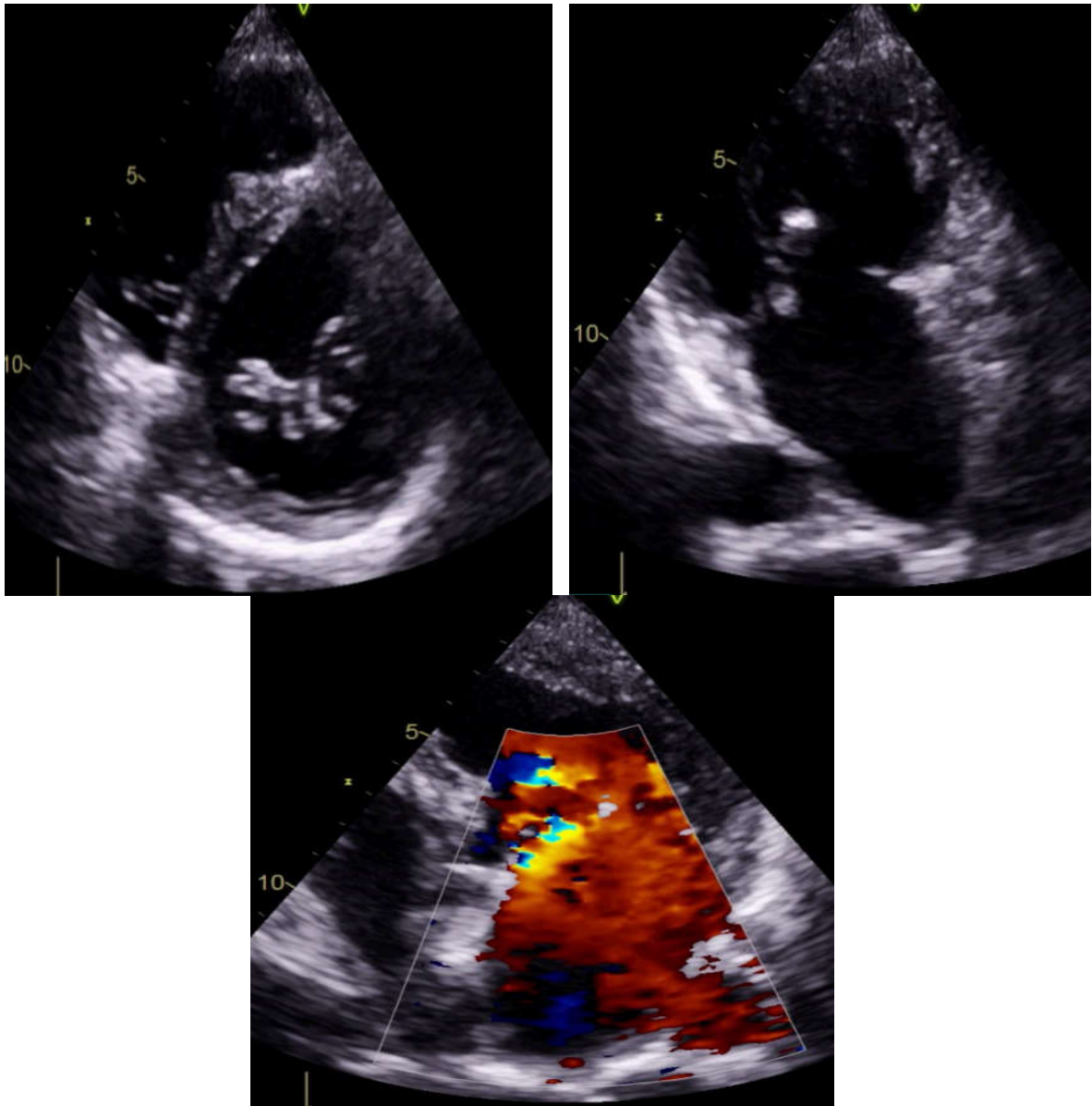


Fig. 2. Image of vegetation on the large mitral valve and severe mitral insufficiency



Fig. 3. Macular haemorrhage of endocarditis origin on OCT-angiography in a 34-year-old patient

4. CONCLUSION

Infectious endocarditis with rheumatological manifestation is a clinical situation which must be mentioned in front of any unexplained rheumatological manifestation accompanied by a fever or an alteration of the general state. The differential diagnosis with non-infectious endocarditis of inflammatory origin is essentially made by the positivity of blood cultures and above all a favorable evolution under antibiotic therapy.

CONSENT

In accordance with international or academic standards, the patient's written consent has been collected and retained by the authors.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. MONIN JL. Endocardite : Recommandations ESC 2015. <https://www cardiologie-Prat-Par-ThemeCongrC3A8ssymposiums; 2015>.
2. Available: <https://www cardiologie-pratique.com/journal/article/0012378-endocardite-recommandations-esc-2015>
3. González-Juanatey C, González-Gay MA, Llorca J, Crespo F, García-Porrúa C,

- Corredoira J, et al. Rheumatic manifestations of infective endocarditis in Non-Addicts: A 12-year study. *Medicine (Baltimore)*. Janv. 2001;80(1):9–19.
4. Marcelli C. Manifestations rhumatologiques des endocardites infectieuses. *EMC - Rhumatol-orthopédie*. Janv. 2005;2(1):33-40.
 5. Gothner M, Ramczykowski T, Ewers A, Kälicke T, Shah S, Schildhauer TA et al. Septische arthritis als manifestation einer floriden endokarditis. *Unfallchirurg* Mai. 2013;116(5):465-70.
 6. Le Bot A, Jégo P, Donal E, Flécher E, Revest M, Tattevin P. Les endocardites non infectieuses. *Rev Médecine Interne*. 2018;39(10):782-91.
 7. Morel J, Combe B. [Rheumatoid arthritis]. *Rev Prat*. 2006;56(5):553-62.
 8. Vantrease A, Trabue C, Atkinson J, McNabb P. Large endocardial rheumatoid nodules: A case report and review of the literature. *J Community Hosp Intern Med Perspect*. juill 2017;7(3):175-7.
 9. Vlahakis NE, Temesgen Z, Berbari EF, Steckelberg JM. Osteoarticular infection complicating enterococcal endocarditis. *Mayo Clin Proc* Mai 2003;78(5):623-8.
 10. Jaziri F, Najjar M, Barbouche S, Mahfoudhi M, Eleuch M, Khedher M et al. Manifestations ostéoarticulaires au cours de l'endocardite infectieuse. Étude de 27 patients. *Rev Médecine Interne*. 2015; 36:A105-6.

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