



# Enfermedades Infecciosas y Microbiología Clínica

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## Scientific letter

### An unexpected cause of myopericarditis in an immunocompromised patient



#### Una causa inesperada de miopericarditis en un paciente inmunodeprimido

We present the case of a 77-year-old man who attended the Accident and Emergency Department (A&E) of our hospital due to a seven-day history of general malaise, asthenia, anorexia and diarrhoea. The patient reported a SARS-CoV-2 infection diagnosed 10 days previously, with onset in the form of a productive cough and fever of up to 38.5 °C, resolving on the third day. In addition, four days before going to the hospital, he suffered an episode of stabbing central chest pain, which increased with deep inhalation, but was self-limiting after a few hours.

His previous medical history included high blood pressure, COPD, a heterozygous mutation in the prothrombin gene, and idiopathic retroperitoneal fibrosis (Ormond syndrome). The patient had an unknown chronic kidney disease (possible membranous glomerulonephritis), for which he had a kidney transplant from a living donor in 2014, developing type 2 diabetes mellitus as a post-transplant complication. His usual medications included prednisone, tacrolimus, everolimus, insulin and acenocoumarol.

Tachycardia and a tendency towards arterial hypotension (92/59 mmHg) with oligoanuria were observed in A&E. An electrocardiogram was performed, which showed atrial fibrillation with a frequency of 150 beats per minute, and ST segment elevation in I, aVL and V4–V5 (Fig. 1). Blood tests showed leucocyte count  $10.3 \times 10^9/l$ , with neutrophilia ( $8.34 \times 10^9/l$ ) and lymphopenia ( $0.49 \times 10^9/l$ ). C-reactive protein (CRP) was 32.9 mg/dl (normal range: 0.0 to 0.5 mg/dl) and the high-sensitivity troponin I (hsTnI) was elevated, reaching a value of 6,448 ng/l (normal range: 0.0 to 34.0 ng/l). The SARS-CoV-2 PCR was negative. A chest X-ray was also performed, which revealed cardiomegaly. After the patient was assessed by cardiology, an echocardiogram was performed, which showed mild left-ventricular systolic dysfunction without clear segmentation, as well as the presence of moderate-to-severe pericardial effusion without images suggestive of endocarditis.

The patient was admitted to the cardiology intermediate care unit and started on treatment with intensive serum therapy and amiodarone. In addition, the everolimus was suspended and antibiotic therapy was started with levofloxacin 250 mg/24 h, with the dose adjusted according to his kidney function. The next day it was decided to perform a pericardiocentesis of the effusion with placement of a pericardial drain, obtaining 500 ml of blood-like pericardial fluid.

The leucocyte count of the pericardial fluid was 5,300/ $\mu$ l, with 93% neutrophils. The glucose in the fluid was 258 mg/dl, while the adenosine deaminase (ADA) value was 58 U/l (normal range: <50). Samples of the pericardial fluid were sent in sterile tubes and inoculated in blood culture bottles (BD BACTEC™ vials) to the microbiology laboratory for culture. No microorganisms were observed in Gram staining. One day later, growth of *Listeria monocytogenes* was detected in the pericardial fluid (both in the direct sample and in the one inoculated in the vials). In the sensitivity study, carried out using the disk diffusion method (SIRscan®, i2a) according to the criteria of the European Committee on Antimicrobial Susceptibility Testing (EUCAST)

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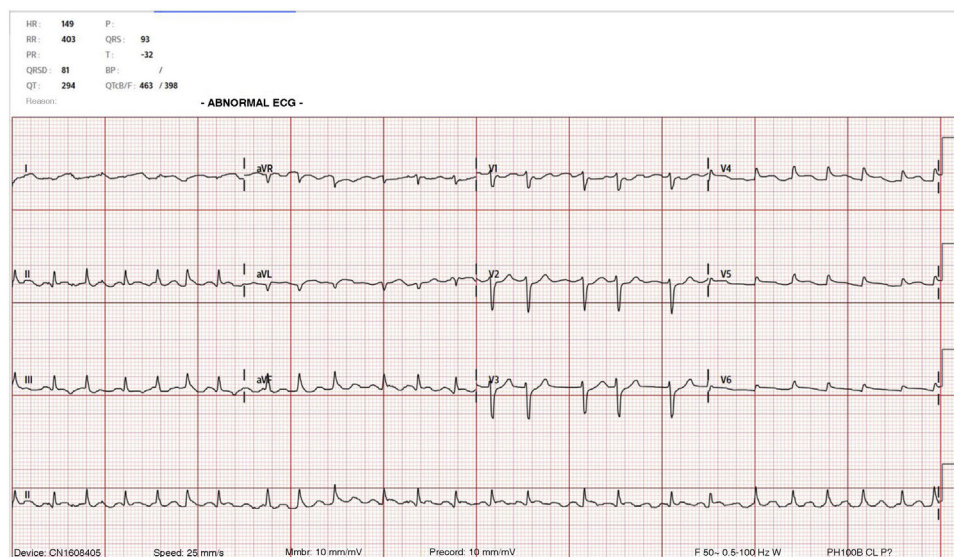


Fig. 1. Electrocardiogram of the patient.

v12.0 ([http://www.eucast.org/clinical\\_breakpoints](http://www.eucast.org/clinical_breakpoints)), the strain was sensitive to penicillin, ampicillin, meropenem, erythromycin and cotrimoxazole. The strain was sent to the Centro Nacional de Microbiología [Spanish National Microbiology Centre] for characterisation. The isolate belonged to genotype IVb. In multilocus sequence typing, performed by whole genome sequencing, it had the sequence type ST388.

One day later, due to the patient's persistent poor general condition, hypotension, worsening kidney function and suspicion of possible septic shock associated with myopericarditis, it was decided to transfer him to the intensive care unit. Antibiotic treatment was administered with ampicillin 2 g/4 h and cotrimoxazole 800–160 mg/8 h. On the third day after starting antibiotic treatment, blood cultures and a urine culture were obtained, which were negative. Lumbar puncture was not performed as there were no signs of meningitis. The patient showed a good clinical response, and it was decided to transfer him to the cardiology ward to complete the six weeks of treatment. He continued to improve functionally and there have been no notable incidents.

*Listeria monocytogenes* is a short gram-positive bacillus of the *Listeriaceae* family. Infection with this bacteria usually occurs in adults in the form of febrile gastroenteritis associated with food-borne outbreaks.<sup>1</sup> Invasive listeriosis manifests as bacteraemia or meningoencephalitis. In pregnant women, there may be a mild, self-limiting disease, or a transient bacteraemia which leads to amnionitis and fetal infection with premature birth, abortion or fetal death. In neonates, we can find an early-onset listeriosis known as granulomatosis infantiseptica, or a late-onset listeriosis.<sup>2,3</sup> However, very few cases of myocarditis due to *Listeria* spp. in humans have been reported in the absence of endocarditis, as is our case. Most of the episodes described occur in immunosuppressed patients and the most common manifestation is heart failure.<sup>4,5</sup> The recommended duration of treatment is four to six weeks and it is recommended to use ampicillin combined with an aminoglycoside (gentamicin) or cotrimoxazole.<sup>1,5</sup> More than half of pericarditis cases due to *Listeria* spp. are accompanied by concomitant bacteraemia with this microorganism. In this patient, blood cultures were collected on the third day after starting antimicrobial treatment and were negative.

In conclusion, *Listeria* spp. is a rare cause of purulent pericarditis and should be taken into consideration in an immunosuppressed patient with heart failure, especially if it is accompanied by bacteraemia due to this microorganism.<sup>5–7</sup>

## Funding

No funding was received.

## Conflicts of interest

The authors have no conflicts of interest to declare.

## Acknowledgements

We would like to thank Dr Raquel Abad Torreblanca, from the National Microbiology Centre of Majadahonda (Madrid), for the genetic characterisation of the *Listeria monocytogenes* strain.

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<https://doi.org/10.1016/j.eimce.2024.04.003>

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