

Case Report

Bartonella quintana* endocarditis: A case report*Majdi Maazoun, Fatma Hammami^{*}, Fatma Gassara, Khaoula Rekik, Makram Koubaa, Mounir Ben Jemaa**

Infectious Diseases Department, Hedi Chaker University Hospital, University of Sfax, Sfax 3029, Tunisia

*** Corresponding author:** Fatma Hammami, fatma.hammami@medecinesfax.org**CITATION**

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Abstract: Endocarditis is a rare and potentially fatal infection of the endocardium. *Bartonella* endocarditis is an emerging disease that causes serious complications and high rates of mortality. Due to the fastidious nature of *Bartonella* species and their high degrees of antibiotic susceptibility, cultures of clinical samples most often remain sterile. The best specimens for polymerase chain reaction amplification are seldom available. The diagnosis of *Bartonella* infections relies mainly on serological methods. We report the case of a 58-year-old woman with dyslipidemia who presented with nocturnal fever, polyarthralgia, sweats and weight loss. The diagnosis of *Bartonella* endocarditis was confirmed by an indirect immunofluorescence assay. Medical treatment alone was efficient for our patient without any surgery.

Keywords: infective endocarditis; *Bartonella quintana*; antibiotics; Serological testing

1. Introduction

Bartonella bacilli are small intracellular gram-negative organisms that are mainly transmitted by arthropod vectors. It is responsible for a significant in-hospital mortality range of 15% to 20% [1]. Infectious endocarditis (IE) are secondary to microorganism most often *staphylococcus* and *streptococcus* [2]. But in some cases, we do not succeed in isolating a germ by blood culture, there are called culture negative IE. Culture-negative IE may have noninfectious causes such as vasculitis or previous antibacterial therapy or might be caused by fastidious organisms. *Bartonella*, *Legionella*, and *Coxiella burnetii* remain significant causes of culture-negative IE. These require special culture media or a prolonged incubation period for retrieval. *Bartonella* endocarditis represents between 1% and 3% of all IE and 12% to 28% of all IE with negative blood cultures [2]. Serologic tests are often the most practical means for diagnosing [3]. To date 23 *bartonella* species have been described. *Bartonella quintana* and *Bartonella henselae* are the two most common species of *Bartonella*, both of which can cause culture-negative endocarditis [4,5]. IE due to *Bartonella* species may be undiagnosed, leading to delays in treatment that can result in increased mortality.

Although blood cultures remain negative for bacterial infection, serology testing might be positive for *Bartonella henselae* and *Bartonella quintana* (IgM and IgG) which confirm the diagnosis [6]. Here, we report a case of a 58-year-old woman diagnosed with IE. Serology was positive for *Bartonella quintana*. Medical treatment was instated and maintained for a long period.

2. Case report

A 58-year-old woman with a history of dyslipidemia who is living in a rural environment with dogs and cats as pets, was hospitalized in our department. She

consulted the emergency room for a 15-day of nocturnal fever, polyarthralgia, sweats and weight loss. She received gentamicin and metronidazole during 3 days without any improvement.

Physical examination revealed a systolic aortic murmur, macular erythematous rash on the inside of the right arm and an apyrexia. On the electrocardiogram we found a wide T wave on V4–V5. Laboratory investigation revealed an accelerated erythrocyte sedimentation rate at 55 mm/h, a C-reactive protein level at 23 mg/L and normal blood count, liver and kidney functions. Abdominal ultrasound revealed a splenomegaly. Transthoracic echocardiography (TTE) showed a rheumatic tight aortic narrowing. During the first week of hospitalization, because of the following arguments: fever, systolic murmur, aortic narrowing, splenomegaly and polyarthralgia, the diagnosis of IE was suspected. The treatment by amoxicillin-clavulanic acid and gentamicin was initiated without improvement. Six blood culture were negative. Serological testing was negative for *Coxiella*, *Rickettsia*, *Brucellosis* and positive for *Bartonella quintana* (*B. quintana*) with a titer of IgG 1/1600. Transesophageal echocardiography revealed a 5 mm vegetation attached to the aortic valve and an aortic insufficiency caused by a perforation on the antero-septal sigmoid. Following these results, oral doxycycline and intravenous ceftriaxone treatment were initiated after 8 days of hospital stay. Amoxicillin-clavulanic acid was replaced by ceftriaxone, and gentamicin was maintained. Human immunodeficiency virus serology was negative. The blood count of white blood cells, lymphocytes and CD₄ were normal. Serum levels of complement components (C3 and C4) and its activity (CH50) were normal. After 30 days of treatment with doxycycline, 20 days of ceftriaxone and 15 days of gentamycin, the Ig G titer against *B. quintana* remained at a titer of 1/1600. After stable apyrexia, the patient was discharged with a doxycycline prescription for 45 days. A control serology after 3 months showed a decrease with a titer of 1/200.

3. Discussion

Here, we report a rare case of *B. quintana* endocarditis which was diagnosed based on indirect immunofluorescence assay. Medical treatment alone was efficient for our patient without any surgery. *B. quintana*, originally known as *Rochalimaea quintana*, is a bacterium transmitted by the human body louse that causes habitually trench fever. Humans seem to be the only host of this bacilli. *Bartonella spp* were recently recognized as important causative agents of culture-negative endocarditis [1]. *B. quintana* has been known as a cause of culture-negative IE. A number of microbiologic tools have been developed to facilitate identification of an infectious agent in patients with suspected endocarditis and negative blood cultures [3]. Cases of endocarditis due to *B. quintana* among homeless people, alcoholics and patient with history of cat scratch were reported by several investigators [4,7]. Our patient had no history of alcohol abuse and was immunocompetent. She had lived in a rural area and had contact with cats. It is unknown how she acquired the infection. Direct diagnosis by isolation of the microorganism is very difficult because *Bartonellae* grow slowly. Fresh blood agar should be used and incubated for 4–6 weeks in a CO₂-enriched atmosphere [7]. The histological study is also useful for the diagnosis. There is a

typical anatomopathological aspect. The use of molecular biology techniques (PCR then sequencing) makes prompt diagnosis possible from tissues such as lymph node, skin or valve. They also offer the possibility of the diagnosis of the species [8]. According to the 2015 European Society for Cardiology (ESC) guidelines for the management of IE, cases of culture-negative endocarditis should raise suspicion for infection due to fastidious bacteria [9]. Serological testing is the easiest and most frequently used tool for the laboratory diagnosis of *Bartonella* endocarditis. Immunofluorescence assay is the reference method, despite the cross-reactivity among *Bartonella spp.* with *Chlamydia spp.* and *C. burnetii* [8]. Nucleic acid amplification testing can help to distinguish between bacterial species when serology testing is inconclusive [9]. Our patient had a negative serology for *Coxiella*, *Rickettsia*, *Brucellosis* and positive for *B. quintana*. So, the bacterial diagnosis was confirmed. In the recommendation of the European Society of Cardiology, the combination of ampicillin or ceftriaxone or doxycycline with gentamicin is recommended. The medical treatment alone is not usually very sufficient. In previous study, more than 90% of *Bartonella* endocarditis require surgery, in particular *B. quintana* endocarditis [10]. Our patient received antibiotics without any surgery. The duration of antimicrobial treatment may be more important than the choice of antibiotics.

4. Conclusion

Culture-negative *Bartonella* endocarditis remains difficult to diagnose due to the low diagnostic yield of available methods. This case demonstrated the importance of the serology in diagnosis of culture-negative endocarditis. A diagnostic approach involving assessment of clinical symptoms and epidemiologic risk factors in conjunction with microbiology and serology testing are crucial to arrive at a definitive diagnosis that allows timely and optimal patient management. An early and appropriate medical antimicrobial treatment can be sufficient to treat *Bartonella* endocarditis and avoid surgical intervention.

Conflict of interest: The authors declare no conflict of interest.

References

1. El-Dalati S, Cronin D, Shea M, et al. Clinical Practice Update on Infectious Endocarditis. *The American Journal of Medicine*. 2020, 133(1): 44-49. doi: 10.1016/j.amjmed.2019.08.022
2. Liesman RM, Pritt BS, Maleszewski JJ, et al. Laboratory Diagnosis of Infective Endocarditis. Kraft CS, ed. *Journal of Clinical Microbiology*. 2017, 55(9): 2599-2608. doi: 10.1128/jcm.00635-17
3. Fournier PE, Gouriet F, Casalta JP, et al. Blood culture-negative endocarditis. *Medicine*. 2017, 96(47): e8392. doi: 10.1097/md.00000000000008392
4. Edouard S, Nabet C, Lepidi H, et al. Bartonella, a Common Cause of Endocarditis: A Report on 106 Cases and Review. Patel R, ed. *Journal of Clinical Microbiology*. 2015, 53(3): 824-829. doi: 10.1128/jcm.02827-14
5. Fournier PE, Lelievre H, Eykyn SJ, et al. Epidemiologic and Clinical Characteristics of Bartonella quintana and Bartonella henselae Endocarditis. *Medicine*. 2001, 80(4): 245-251. doi: 10.1097/00005792-200107000-00003
6. Patel S, Richert ME, White R, et al. A Case of Bartonella Quintana Culture-Negative Endocarditis. *American Journal of Case Reports*. 2019, 20: 602-606. doi: 10.12659/ajcr.915215
7. Okaro U, Addisu A, Casanas B, et al. Bartonella Species, an Emerging Cause of Blood-Culture-Negative Endocarditis. *Clinical Microbiology Reviews*. 2017, 30(3): 709-746. doi: 10.1128/cmr.00013-17

8. Fournier PE, Mainardi JL, Raoult D. Value of Microimmunofluorescence for Diagnosis and Follow-up of Bartonella Endocarditis. *Clinical and Vaccine Immunology*. 2002, 9(4): 795-801. doi: 10.1128/cdli.9.4.795-801.2002
9. Habib G, Lancellotti P, Antunes MJ, et al. 2015 ESC Guidelines for the management of infective endocarditis: The Task Force for the Management of Infective Endocarditis of the European Society of Cardiology (ESC). Endorsed by: European Association for Cardio-Thoracic Surgery (EACTS), the European Association of Nuclear Medicine (EANM). *European Heart Journal*. 2015, 36(44): 3075-3128. doi: 10.1093/eurheartj/ehv319
10. Raoult D, Fournier PE, Vandenesch F, et al. Outcome and Treatment of Bartonella Endocarditis. *Archives of Internal Medicine*. 2003, 163(2): 226-230. doi: 10.1001/archinte.163.2.226