



## Case report

# Abiotrophia defectiva endocarditis – Diagnostic and therapeutic challenge: Case report

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## ABSTRACT

Belonging to the normal oral, gastrointestinal, and urogenital flora, *Abiotrophia defectiva* is responsible for 1–2 % of all infective endocarditis (IE) cases. The manifestation of *A. defectiva* endocarditis may be atypical, without fever. Difficult to isolate pathogen requires special culture media. A 45-year-old female was admitted due to anemia and progressive weight loss (8 kg in 6 months). She had a history of benign mitral valve (MV) prolapse and non-stenotic bicuspid aortic valve (BAV). In echocardiography, large vegetations on MV and small vegetation on BAV were found. An enriched medium for fastidious pathogens was used. *A. defectiva* was identified using biochemical analysis with VITEK-2 Compact. In the fourth week of antibiotic therapy, she required urgent MV replacement due to MV regurgitation progression while vegetation on BAV disappeared. Although patient's frailty and underweight caused prolonged postoperative wound healing, she was transferred to rehabilitation in good conditions. No relapse of IE was observed during five-month follow-up.

## Introduction

Common manifestations of infective endocarditis (IE) include fever, fatigue, new or changed heart murmur and embolic complications. Anemia and weight loss without fever occurs rarely [1]. Insidious, subacute or chronic course of the disease may be caused by atypical pathogens such as *Abiotrophia defectiva*. It is thought to be responsible for 4–8 % of streptococcal endocarditis and about 1–2 % of the total IE [1–3]. Although *A. defectiva* belongs to the normal flora of the oral cavity, gastrointestinal tract and urogenital tract, it can lead to severe IE with the development of large vegetations, valves destruction, progressive heart failure and embolic events [4]. Immunocompromised individuals and patients with preexisting valve disease are at a particular risk. The incidence of complications, treatment failure, need for

valve replacement and mortality rate are higher compared to IE caused by common pathogens. Moreover, *A. defectiva* is difficult to isolate, requires specialized culture media and is responsible for the majority of negative cultures [1–3].

## Case report

A 45-year-old immunocompetent female was admitted due to anemia, lack of appetite and progressive weight loss (8 kg in 6 months) of unexplained etiology. She denied fever or chills. The patient had a history of benign mitral valve (MV) prolapse and non-stenotic bicuspid aortic valve (BAV). A physical examination revealed significant underweight (body mass index - BMI 14.2 kg/m<sup>2</sup>), moderately enlarged spleen and systolic murmur radiating to the armpit. Laboratory tests showed:

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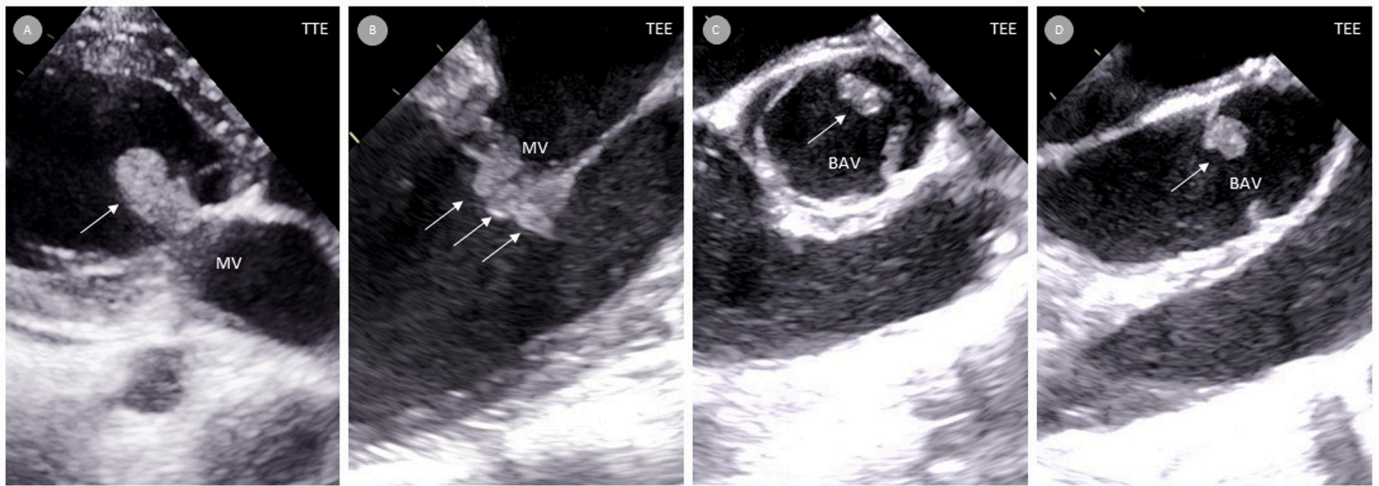
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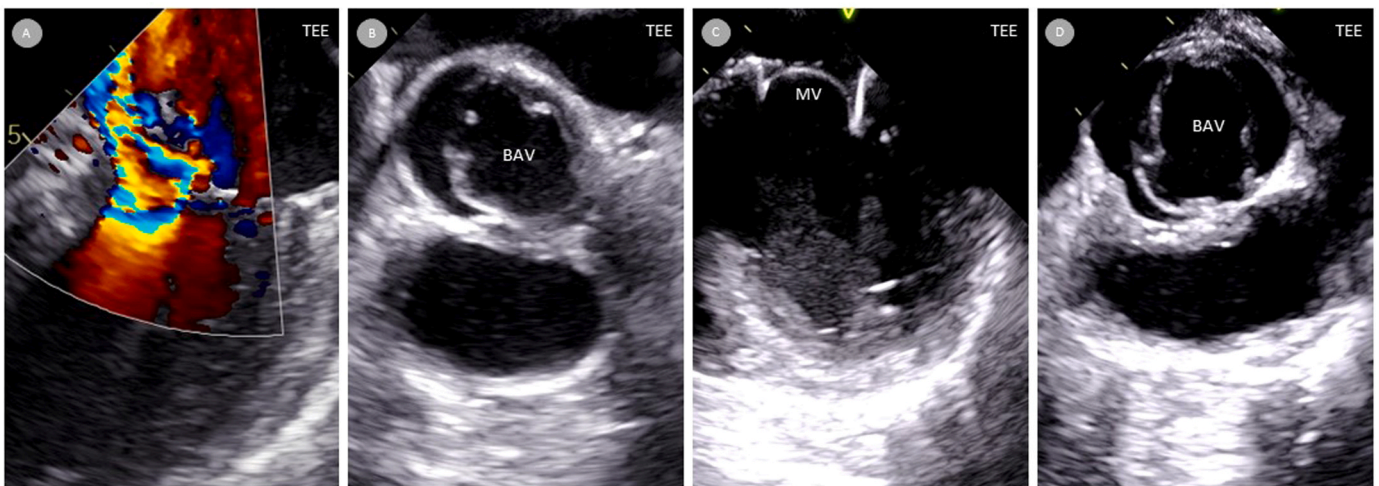
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**Fig. 1.** Echocardiography at admission: Large vegetations on mitral valve - MV (A and B) and small vegetation on bicuspid aortic valve - BAV (C and D). TTE - transthoracic echocardiography, TEE - transesophageal echocardiography.



**Fig. 2.** TEE immediately before surgery: severe MV regurgitation in color doppler imaging, BAV without vegetation (A and B) and 6 months after surgery: MV bioprosthesis and BAV without vegetations (C and D).

normocytic anemia (hemoglobin 5.7 mmol/l) without leukocytosis, decreased iron concentration and moderately elevated CRP and procalcitonin - 45.8  $\mu\text{g/l}$  and 0.27 ng/ml, respectively. In transthoracic (TTE) and transesophageal echocardiography (TEE) large vegetations on MV (Fig. 1A and B), moderate mitral insufficiency and BAV with small vegetation (Fig. 1C and D) were found.

Abdominal computed tomography (CT) revealed subcapsular splenic infarction. There were no embolic foci in the head CT. Blood cultures were all positive. Enriched medium for fastidious pathogens (Columbia agar with 5 % sheep blood) was used. Biochemical analysis with VITEK 2 Compact (bioMérieux) identified *A. defectiva*. On the grounds of antimicrobial susceptibility test results antibiotic therapy with ampicillin and gentamycin was started. Three wisdom teeth identified as a potential source of infection were removed. In the fourth week of hospitalization patient's health condition deteriorated significantly. TEE showed progression of mitral regurgitation despite the reduction in MV vegetations size and the disappearance of vegetation on BAV (Fig. 2A and B). The MV was replaced with bioprosthesis (Edwards Perimount Magna); intraoperative evaluation of BAV confirmed no need for intervention in this regard. Although patient's frailty and underweight caused prolonged postoperative wound healing, she was transferred to rehabilitation in good condition. No relapse of IE was observed during the six-

month follow up (Fig. 2C and D), inflammation markers remained normal and BMI increased to 17.1 kg/m<sup>2</sup>.

## Discussion

Atypical course of IE, without fever, accounts for about 10 % of cases. Weight loss and anemia, main signs of the disease in our patient, are not included in Duke's criteria of IE. However, such signs should alert physicians especially if a patient has a history of valve disease. Echocardiography (with TEE) and blood cultures (using enriched agar as standard medium) are obligatory [1].

*A. defectiva* is a nutritionally variant streptococcus (NVS); thriving on media supplemented with pyridoxal or L-cysteine to promote colony growth, which has nonspecific morphology [5]. Biochemical analysis (with specific substrates metabolized by microorganisms) using VITEK system can be prospectively substituted by matrix-assisted laser desorption/ionization (MALDI) mass spectrometry – precise and fast diagnostic tool applied to the analysis of microorganism biomolecules [6,7].

As *A. defectiva* is part of normal flora in the mouth, dental problems play a crucial role in the development of IE [8,9]. Infrequently, the primary infection affects the urinary tract [10]. The secretion of

exopolysaccharide and the ability to adhere to fibronectin explains the affinity of *A. defectiva* to endovascular tissue and predisposition to the development of large vegetations [11]. The insidious but aggressive course of IE with such vegetations is associated with a particular risk of systemic embolization, severe valve destruction and progressive valvular regurgitation. It is not uncommon for two valves to be involved [12].

*Abiotrophia defectiva* IE is characterized by a high, over 50 % incidence of the need for surgical treatment, as indicated by the latest European guidelines on the management of endocarditis [1]. In the presented case, MV replacement was the only effective treatment to save patient; on the other hand, antibiotic therapy was sufficient to suppress small BAV vegetation.

Infective endocarditis caused by *A. defectiva* is a particular problem in developing countries [13,14]. In the pediatric population, it occurs mainly amongst children with congenital heart defects or a history of cardiac surgery; dental issues and septic tonsillitis are important predisposing conditions [13].

Different serious infectious complications (apart from IE) associated with *A. defectiva* or other NVS include: meningitis, brain abscesses, pancreatic abscess, osteomyelitis, septic arthritis, prosthetic joint inflammation, as well as kidney damage in the mechanism of septic emboli or glomerulonephritis [12,15].

## Conclusions

One should remember that *A. defectiva* may be a rare cause of IE. The paucity or atypicality of initial symptoms may result in delayed IE diagnosis. Nevertheless, clinical exacerbation often leads to a poor prognosis.

## Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request

## Consent

A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

## Ethics approval

Written consent for the use of health information has been obtained from the patient.

## Disclosure of interest

All authors have no conflicts of interest. All co-authors have seen and agree with the contents of the manuscript.

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## Conflict of interest

All authors have no conflicts of interest.

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