Cor et Vasa

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Kasuistika | Case report

Cardiobacterium hominis and endocarditis. Rare but important clinical relevance

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ARTICLE INFO

Article history:
Received: 15. 4. 2017
Accepted: 2. 5. 2017
Available online: 25. 5. 2017

Klíčová slova:
Atrioventrikulární blokáda
Cardiobacterium hominis
Elektronický implantabilní přístroj pro podporu srdeční funkce
Infekční endokarditida
Těžká mitrální regurgitace

Keywords:
AV block
Cardiac implantable electronic device
Cardiobacterium hominis
Infective endocarditis
Severe mitral regurgitation

SOUHRN

Infekční endokarditida je závažné onemocnění s vysokou morbiditou. *Cardiobacterium hominis* patří do skupiny mikroorganismů pod označením HACEK. Popisujeme případ 56letého muže s infekční endokarditidou postihující nativní mitrální chlopeň a vyvolanou bakterií *Cardiobacterium hominis*. Význam tohoto případu spočívá ve skutečnosti, že infekce vyvolané bakterií *Cardiobacterium hominis*, i když nejsou příliš časté (přibližně 1–3 % všech případů), jsou možnou příčinou infekční endokarditidy se závažnými klinickými důsledky.

ABSTRACT

Infective endocarditis is a severe disease with high morbidity rate. *Cardiobacterium hominis* (CH) is a member of the HACEK group of microorganisms. We show the case of a man of 56 years with infective endocarditis on a native mitral valve, sustained by *Cardiobacterium hominis*. The relevance of this case is based on the fact that infections sustained by CH, even if not so frequent (about 1–3% of all cases), are a possible cause of infective endocarditis with important clinical consequences.

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DOI: 10.1016/j.crvasa.2017.05.002

Please cite this article as: A. Ioppolo, et al., *Cardiobacterium hominis* and endocarditis. Rare but important clinical relevance, Cor et Vasa 60 (2018) e497–e499 as published in the online version of *Cor et Vasa* available at https://www.sciencedirect.com/science/article/pii/S0010865017300796

Introduction

Infective endocarditis (IE) is a severe disease with a low incidence (1.7–7.9 cases per 100,000 inhabitants) but high morbidity rate. Gram positive bacteria, such as streptococci and staphylococci, are the most common etiologic agents. The incidence of Gram-negative endocarditis ranges from 1.3% to 10% and, between them, those ones of the HACEK group are the main causes of these infrequent cases. The "HACEK" acronym represents the five species of microorganisms implicated in these infections, including *Haemophilus* spp., *Aggregatibacter* spp., *Cardiobacterium hominis* (CH), *Eikenella corrodens* a *Kingella kingae* [1–3].

Case presentation

A 56-year-old man was admitted to hospital complaining for dyspnea. He had a history of psoriasis, hypertension and a recently diagnosed paroxysmal atrial fibrillation. During the past 2 weeks he experienced shortness of breath and then a low-grade fever. The blood count showed a rising of white blood cells and of other reactive acute phase markers. Transthoracic echocardiography (TTE) showed normal contractility of both right and left ventricle, an aneurysm of the anterior mitral leaflet (Fig.1A, arrow) and, on the atrial side of the valve, a small nodular-shaped mass, with an echocardiographic profile compatible with a vegetation. The color-Doppler showed a concomitant (Fig.1B, arrow) moderate-to-severe mitral regurgitation. This finding was confirmed by transesophageal echocardiography (TEE) which revealed a perforation of the anterior mitral leaflet (Fig.1C, arrow), causing a large and eccentric severe jet reaching the posterior wall of the left atrium (Fig. 1D) [4–12]. Three sets of blood cultures were collected at 30 minutes intervals. Later was started an empirical regimen with intravenous broad-spectrum antibiotics. The day after hospital admission the patient had an acute pulmonary edema, threated with high intravenous dose of diuretics. Soon he was referred to the Cardiac Surgery Department where he underwent mitral valve replacement with a mechanical prosthesis. Postoperative course was complicated by III degree atrioventricular (AV) block, treated with a bicameral pacemaker implantation. Meanwhile from blood cultures a Gram-negative bacillus was isolated (oxidase positive, catalase negative and urease negative), identified as CH. After obtaining an antibiotic assay it was performed a therapy with a third-generation cephalosporin (according to current IE recommendations it was administered ceftriaxone 2 g/day for 4–6 weeks) [13–16]. After 4 weeks the patient was asymptomatic and in good clinical status. A new echocardiography demonstrated a properly functioning prosthetic mitral valve. New blood cultures were fully negative. He was discharged in stable condition.

Discussion

CH is a member of HACEK group. It is found in the normal oral microbiota [17] in more than 70% of general population. In many cases (44%) its presence is related to underlying oral infections or previous dental procedures. The relevance of this case is based on the fact that IE sustained by CH, even if relatively rare (about 1–3% of all cases), is a disease with an excellent prognosis and sim-

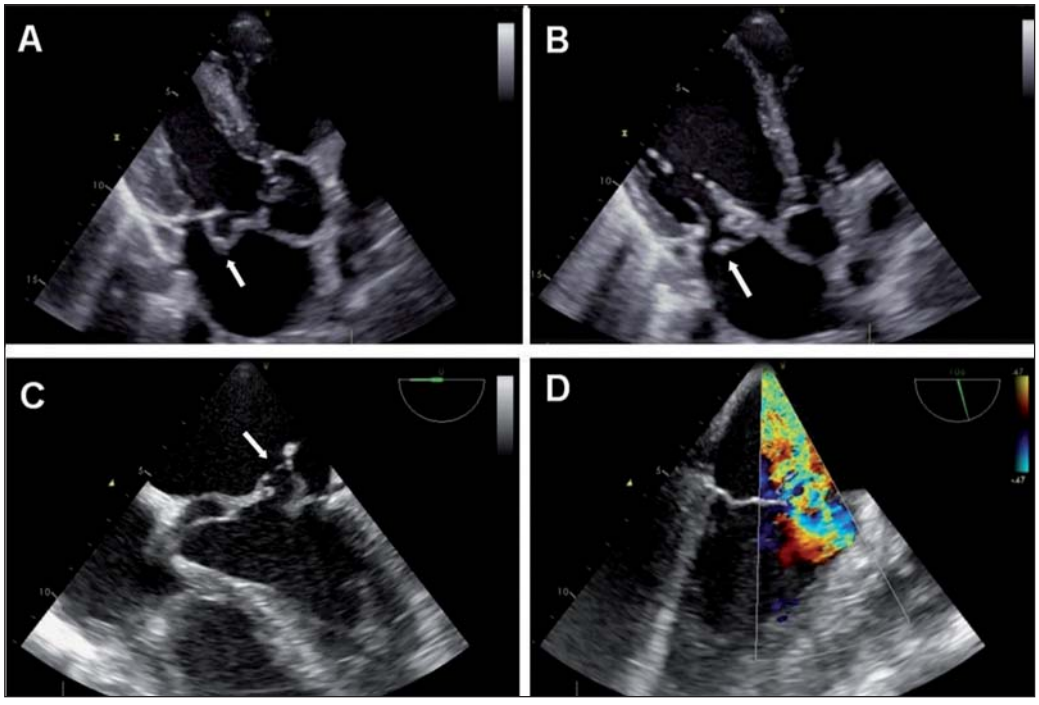

Fig. 1 (A) Transthoracic echocardiography: aneurysm of the anterior mitral leaflet (arrow). (B) Transthoracic echocardiography: nodular image compatible with small vegetation (arrow). (C) Transesophageal echocardiography: aneurysm and perforation of anterior mitral leaflet (arrow). (D) Transesophageal echocardiogram: severe mitral regurgitation.

ple management if the organism is properly identified. Conversely the infection could become fatal in case of delayed diagnosis. CH, however, is not always easily isolated from the blood cultures because it is a slow-growing agent which needs a special environment. Standard blood cultures may need up to 7 days for the diagnosis of CH endocarditis (CHIE). With new blood culture systems prolonged incubations to recover this bacterium are no longer necessary [18]. Furthermore alternative diagnostic tools such as rt-PCR (real-time polymerase chain reaction) can be used for its identification. Another factor complicating diagnosis of CHIE is that its clinical course is often subacute [2]. This insidious onset explain because diagnosis is made only in more advanced stages, with very large vegetations and peripheral and central nervous system embolization. Despite the high prevalence of stroke, CHIE has a remarkably low mortality rate, suggesting that currently recommended antibiotic therapy with third-generation cephalosporin is very effective [19]. The prognosis of both native and prosthetic valve endocarditis sustained by CH is favorable in 80–90% of cases and only few patients need surgery. In our case the decision to replace rather than repair the valve was mainly due to size and site (anterior rather than posterior leaflet) of perforation and to the condition of the surrounding tissue. Most of the cases of CHIE in literature concern aortic valve [20,21] (in particular in case of bicupid valves) rather than mitral valve. Aneurysm of anterior mitral leaflet was the result of a valvulitis with subsequent formation of both granulation and scar tissue diplaced from the pressure. Aneurysm formation of the mitral leaflet may often precede a subsequent mitral perforation but this is very rare in CHIE. This element highlights the importance to systematically perform a TEE in patients with IE, in order to detect new complications and provide detailed anatomic and morphologic view of valves and vegetations. This case emphasize the leading role of a collaborating multidisciplinary team (consisting of cardiologist, infectious disease specialist, microbiologist and often cardiothoracic surgeon) – to optimize the management of IE.

Conflict of interest
None.

Funding body
None.

Ethical statement
Authors state that the research was conducted according to ethical standard.

Informed consent
Informed consent was obtained from the patient.

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