A rare case of a native aortic valve fungal endocarditis in a young woman

Rzadki przypadek grzybiczego zapalenia wsierdzia na natywnej zastawce aortalnej u młodej kobiety

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Słowa kluczowe: zastawka aortalna, *Candida*, grzybicze zapalenie wsierdzia.

Abstract

We present a rare case of a native aortic valve fungal endocarditis in a young obese woman. Our patient had undergone a bariatric surgery followed by numerous local complications associated with further surgical procedures and multiple antibiotic treatment. Six months later, she was admitted to our centre with signs of septicaemia. In echocardiography a massive tumour on the aortic valve was revealed. An urgent cardiosurgery operation was performed – the tumour was resected and an artificial valve was implanted. Microbiological analysis of the tumour and blood samples confirmed fungal infection (Candida albicans). Intensive antifungal therapy was continued for 4 weeks. However, during the hospitalization serious embolic complications were observed. Finally, the patient responded well on implemented treatment and was discharged in a good clinical condition. Our case presents an exceptionally rare form of cardiac infection, unexpected in immunocompetent patients. We associate this condition with an unfavourable course of the previous bariatric therapies.

Streszczenie

Przedstawiamy niezwykły przypadek grzybiczego zapalenia wsierdzia na natywnej zastawce aortalnej u młodej otyłej kobiety. Nasza pacjentka przebyła zabieg chirurgii bariatrycznej powikłany serią miejscowych komplikacji, które były przyczyną kolejnych operacji oraz stosowania licznych antybiotyków. Sześć miesięcy później pacjentka została przyjęta do naszego ośrodka z objawami sepsy. W echokardiografii stwierdzono dużą zmianę guzowatą związaną z zastawką aortalną. Wykonano pilny zabieg kardiochirurgiczny – wycięto guza wraz z zastawką i wszczepiono protezę mechaniczną w ujście aortalne. W badaniach mikrobiologicznych guza i posiewów krwi potwierdzono zakażenie grzybicze (*Candida albicans*). Przez 4 tygodnie kontynuowano intensywne leczenie przeciwgrzybicze. Mimo to w trakcie hospitalizacji wystąpiły powikłania zatorowe w ośrodkowym systemie nerwowym oraz oku. Ostatecznie pacjentka dobrze odpowiedziała na stosowane leczenie i została wypisana do domu w stanie dobrym. Nasz przypadek przedstawia wyjątkowo rzadką formę infekcji serca, niespodziewaną szczególnie u immunokompetentnych pacjentów. Łączymy ten stan z niekorzystnym przebiegiem wcześniej stosowanego leczenia bariatrycznego.

Introduction

Nowadays, bariatric surgery is the only procedure that can provide satisfactory long-term outcomes for people suffering from advanced obesity. However, this type of a surgical intervention is associated with a variety of early and late complications [1]. In this report we present a case study of fungal endocarditis, an exceptionally rare form of a cardiac infection, resulting from complications of previous bariatric procedures.

Case report

A 37-year-old woman underwent a laparoscopic sleeve gastrectomy due to advanced obesity (body mass index (BMI) over 40 kg/m^2). In the early postoperative period an intraabdominal abscess formed in

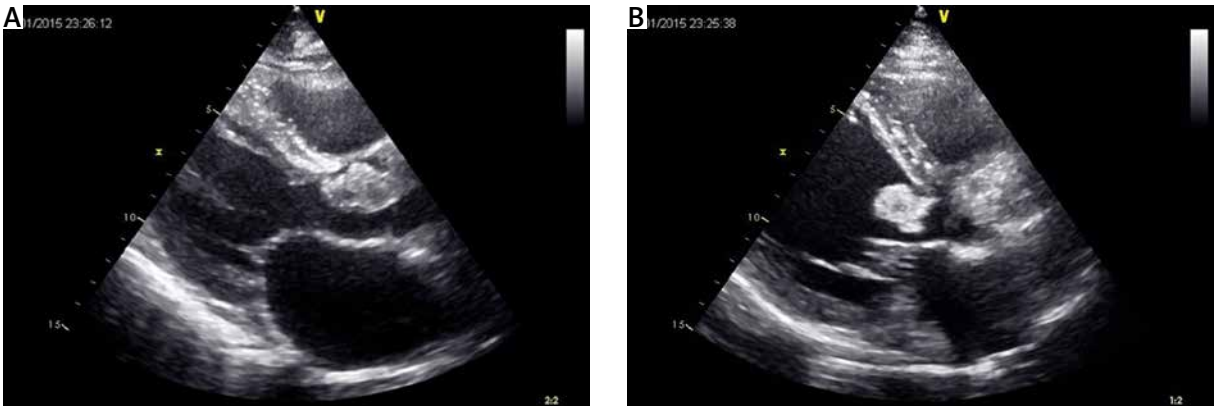

Figure 1. **A, B** – Echocardiographic assessment of a mass

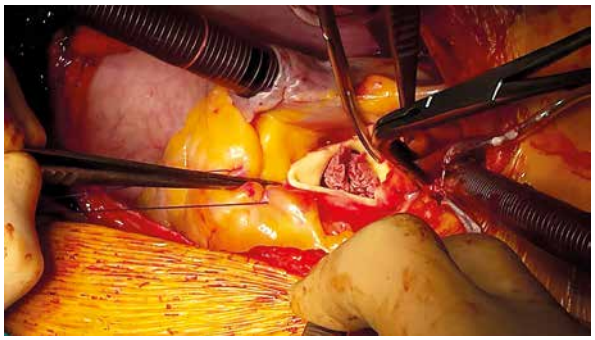

Figure 2. Intraoperative assessment of a mass

the epigastric area. For that reason, on the sixth day after the index procedure a reoperation was necessary – the abscess was evacuated and the upper anastomosis was sutured. Three weeks later, an eventeration occurred and the patient underwent another laparotomy – the stomach was removed and oesophageal intestinal Roux-en-Y anastomosis was performed. Finally, 2 months later, as a result of surgical wound suppuration, the infected tissues were resected and the patient underwent abdominoplasty. In course of the treatment the patient was administered various types of antibiotics: Ceftriaxone, Amoxicillin/Clavulanic acid, Metronidazole, Amikacin, and Meropenem.

Six months after the index operation, the patient was admitted to our Cardiac Surgery Department from the local Cardiology Centre with an initial diagnosis of a myxoma based on echocardiographic examination. The patient had suffered from high fever (up to 40°C) and growing dyspnoea for 10 days and the symptoms persisted despite empiric antibiotic administration. On admission to our centre the patient was in a serious clinical condition: febrile, diaphoretic, dyspnoeic with a significant tachycardia.

Emergency echocardiography was performed, which revealed a large mass, probably vegetation, 37 × 20 mm in diameter, in connection with the left coronary leaflet of the aortic valve (AV), and with signs of severe aortic regurgitation (AR) with shortened pressure half time (PHT) 107 ms. There was also a moderate mitral regurgitation (secondary do severe AR) with no deviation in mitral valve (MV) morphology. Mild dilatation of the left ventricle (LVEDD – 65 mm, LVESD – 40 mm) was observed, with general hyperkinesis (Figure 1 A, B).

The patient was qualified for an urgent surgery. During preparation a sudden cardiac arrest occurred. Immediate resuscitation, including defibrillation, was implemented, which resulted in a return of spontaneous circulation. The surgical procedure was carried out in cardiopulmonary bypass, in general hypothermia of 30°C with blood cardioplegia. After the aortotomy, a massive tumour placed within the left coronary leaflet (Figure 2) as well as an inflamed aortic valve annulus were removed, and an artificial aortic valve SJM 19A was implanted.

After the surgery the patient demanded circulatory and respiratory support. Inotropic infusion along with diuretics was introduced. In the early postoperative period left hemiparesis along with aphasia emerged. Head computed tomography (CT) revealed a hypotensive lesion in the right frontoparietal area. Thanks to continued rehabilitation the symptoms have gradually subsided.

Empiric antibiotic therapy consisting of Vacomicin, Gentamicin, Metronidazole, and Fluconazole was immediately introduced. Microbiological examination of the excised aortic valve vegetation as well as blood culture disclosed *Candida albicans* susceptible to Fluconazole and Voriconazole. Laboratory biomarkers of inflammatory response were significantly elevated (Figure 3). Despite the administered therapy, fever episodes were observed during the first few days after the surgery. In a week the patient was afebrile, the white blood count (WBC) as well as C-reactive protein (CRP) subsided, and controlled blood culture were negative. Fluconazole administration was changed to Voriconazole. Unfortunately, vision disturbances arose. An ophthalmology consultant confirmed the

diagnosis of a fungal infection (subretinal lesion) of the right eye. Antifungal therapy was continued through 4 weeks. A CT scan of chest and abdomen did not revealed any potential source of a hidden infection. Postoperative echocardiography revealed no abnormalities: preserved contractility of left ventricle with ejection fraction (LVEF) over 50% and satisfactory aortic valve prosthesis function with prosthesis pressure gradient of 35/17 mm Hg. As soon as was possible, an oral anticoagulant was administered. Further hospitalization was uneventful, and the patient was discharged from Cardiac Surgery Ward after 4-week-long treatment in a stable condition.

Discussion

This case report presents an unusual native aortic valve *Candida endocarditis* in an immunocompetent patient. Infective endocarditis (IE) is one of the most challenging diagnoses, having many presentations, from indolent infection to septicaemia. The vast majority of IE cases are caused by various species of bacteria whereas fungal infection accounts only for 1% to 3% of all infective endocarditis cases. What is more, fungal endocarditis remains extremely rare in immunocompetent patients with native valves. *Candida* spp. is the most common pathogen, responsible for more than 50% of cases of fungal endocarditis. This kind type of infection has specific echocardiographic features like abnormally large vegetations and it is associated with an exceptionally high mortality rate, ranging from 30% to 80% despite surgical and antifungal treatment.

Candida spp. account only for 1–2% of all infective endocarditis (IE) cases. In the past it was predominantly observed in intravenous drug users. Nowadays it is strongly associated with a prosthetic valve or prior bacterial endocarditis. In many cases there is a long time interval (over 1 year) between a previous episode or intervention to the manifestation of fungal endocarditis. Other important risk factors are immunosuppression (due to neutropaenia, transplants, solid tumour, or AIDS) and congestive heart failure. The majority of infections are acquired nosocomially [2–4].

The clinical presentation of *Candida endocarditis* includes septicaemia with a persistent fever (with resistance for empiric antibacterial therapy) and an extremely high risk of embolic complications, which is the most common reason for early surgical intervention.

In addition, CE has specific echocardiographic features like abnormally large vegetation (often over 20 mm), which are usually hyperechogenic (dense) or heterogeneous. Local complications like abscesses or aneurysms are common. In many cases there is a notable discrepancy between the large size of the vegetation and a rather mild grade of the associated valve regurgitation. Quite often the vegetation adheres to paravalvular structures or interventricular septum [5].

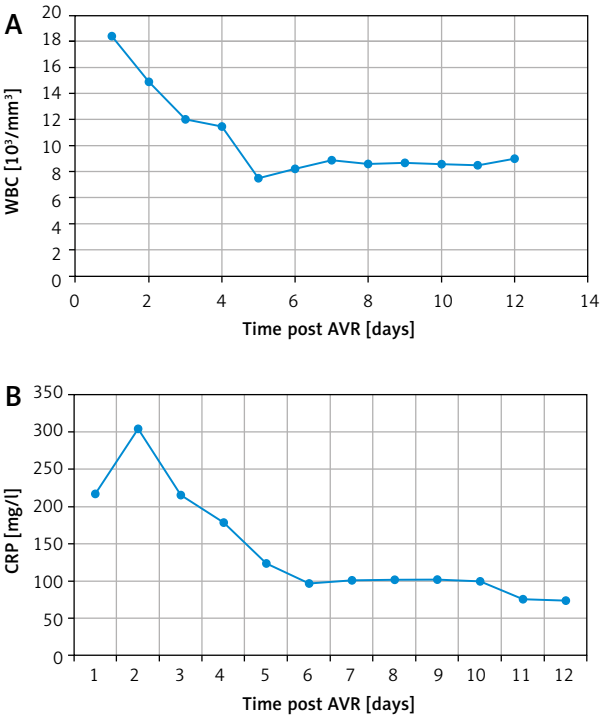

Figure 3. White blood count (WBC) and C-reactive protein (CRP) in the postoperative period

In our case, the mass in the left ventricle outflow tract was exceptionally large (37 × 20 mm) and hyperechogenic, which is a characteristic feature of fungal vegetation. Despite the urgent surgery, our patient developed embolic complications, which is characteristic for fungal endocarditis. There is an obvious connection between the size and heterogenic structure of fungal vegetation and an extremely high risk of embolism [5].

Our patient, a 37-year-old woman, had no history of previous heart disease or immunosuppression. She was an obese person (body mass index (BMI) about 40 kg/m^2 on admission). Six months before the admission she had undergone a bariatric surgery complicated by the infection in the operation area. As a consequence further surgical interventions as well as various antibiotics were administered. Follow-up was uneventful until sudden onset of endocarditis symptoms. Retrospective analysis of this case revealed that it was the only risk factor of the endocarditis. That is in accordance with previous reports – the majority of fungal infections are nowadays acquired nosocomially [2–4].

The patient displayed a favourable clinical course, responded well on the implemented treatment, and after 4 weeks of antifungal therapy she seemed to be cured. Unfortunately, a few months later, she died of an unknown cause. The mortality rate of *Candida endocarditis* is significantly higher that bacterial valve involvement. One of the latest analyses showed that in-hospital mortality is estimated at 36% while 1-year

mortality is up to 59%. Paradoxically, mortality was not affected by use of surgical therapy or choice of antifungal agent [2].

Although fungal endocarditis is very rare in a clinical practice, especially in patients with no history of previous endocarditis or heart surgery, early diagnosis, surgical intervention, and prolonged antifungal therapy is necessary to save the patient's life [6–10].

Conclusions

We present a rare case of native aortic valve fungal endocarditis in a young obese woman. Our patient had undergone a bariatric surgery followed by numerous local complications associated with further surgical procedures and multiple antibiotic treatment. Six months later, she was admitted to our centre with signs of septicaemia. In echocardiography a massive tumour on the aortic valve was revealed. An urgent cardiosurgery operation was performed – the tumour was resected, and an artificial valve was implanted. Microbiological analysis of the tumour and blood samples confirmed fungal infection (*Candida albicans*). Intensive antifungal therapy was continued for 4 weeks. However, during the hospitalization serious embolic complications were observed in the central nervous system and one eye. Finally, the patient displayed a favourable clinical course, responded well on the implemented treatment, and was discharged in a good clinical condition. Our case presents an exceptionally rare form of cardiac infection, unexpected in immunocompetent patients. We associate this condition with an unfavourable course of the previous bariatric therapies.

Conflict of interest

The authors declare no conflict of interest.

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