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Recurrent infective endocarditis in a patient with severe Crohn's disease

Nawracające infekcyjne zapalenie wsierdzia u pacjenta z ciężką postacią choroby Leśniowskiego-Crohna

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Abstract

A 27-year-old patient after mitral valve replacement because of infective endocarditis (IE) in 2013, treated with biological medicaments for Crohn's disease was admitted to the hospital because of fever and neurological symptoms. Electrocardiogram at the admission revealed signs of myocardial ischemia. In computed tomography scanning signs of septic embolism were found. In managed transoesophageal echocardiography (TEE) vegetation near mechanical prosthesis annulus was identified. Urgent coronary artery angiography revealed 100% stenosis in the circumflex artery. Because of the unsatisfactory result of the immediately managed percutaneous coronary intervention, pharmacological treatment of coronary artery disease was managed on the regular basis. Due to the definite diagnosis of IE empiric antibiotic therapy was initiated. After receiving microbiological blood test results the targeted antibiotic therapy was implemented. Anticoagulant treatment with acenocoumarol was being managed during the whole hospitalisation. The gradual improvement in general condition and regression of vegetation in TEE were observed.

Key words: infective endocarditis, Crohn's disease

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Introduction

After years of rapid development in cardiology, infective endocarditis (IE) remains a serious issue, both in diagnosis and treatment. The conditions that increase the risk of IE are the incidence of the mechanical valve prosthesis, IE in medical history and cyanotic congenital heart disease. The clinical manifestation varies in patients, including fever (90% of patients), murmurs in heart auscultation (85% of patients) and symptoms of embolism in several organs (brain, lung, spleen). In 30% of patients, embolism is the first clinical symptom of the disease which can lead to stroke or pulmonary embolism [1]. Atypical clinical manifestations of IE often occur in elderly patients and those with an impaired immunological system (autoimmunology disease, immunosuppressant administration, congenital immunodeficiency). Following the 2015 European Society of Cardiology (ESC) guidelines the diagnosis should consist of association between clinical symptoms, imaging procedures and previous medical history. Implementation

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of modified Duke criteria is recommended for further classification [2].

Case report

A 27-year-old patient was referred to the 1st Department of Cardiology, Medical University of Gdansk (MUG) because of fever (40 Celsius degree) with a preliminary diagnosis of IE. The medical history of the patient includes IE (2013) treated with mitral valve replacement (Sorin Biomedica Bicarbon Fitline), Crohn's disease (from 2017), and appendectomy (2012). The medicaments were prescribed on the regular basis: the anticoagulant therapy was conducted by acenocoumarol [international normalized ratio (INR) at admission 2.45), the treatment of Crohn's disease included prednisone (20 mg/day in one dose) and mesalazine (3 g/day in three doses). Three days before the fever incidence the patient was discharged from the Department of Gastroenterology of MUG where he was hospitalised for the scheduled continuation of biological treatment due to severe Crohn's disease (infliximab, third course). According to medical documentation, the patient was discharged in good condition after diagnostic procedures (gastroscopy and colonoscopy).

On admission day to the hospital, the patient was haemodynamically stable, measured non-invasive blood pressure was 120/70 mm Hg. The general condition was evaluated as average, the patient was fully responsive, assessed in Glasgow Coma Scale with 15 points. No murmurs instead of mechanical valve prosthesis click were found in heart auscultation. Following abnormalities were observed in the physical examination: numerous petechiae on the patient's hands and legs, left-side hemiparesis, left facial nerve paresis and left-side hemianopia. No stenocardia was reported. The results of conducted laboratory tests are shown in **Table 1**. Electrocardiogram (ECG) revealed sinus rhythm 110 beats/minute, cardiac axis — normal, no rhythm disturbances and persistent ST-segment elevation in II, III and aVF, which suggested ischemia of the inferior wall of the heart. Due to neurological symptoms, computed tomography (CT) of the central nervous system was managed. Hypodense structures in the precentral and postcentral gyrus of the right cerebral hemisphere and the right cerebellar hemisphere were discovered which aetiology was suggested by the consulting radiologist as septic embolism. The result of CT is presented in **Figure 1A**. In conducted transoesophageal echocardiography (TEE) left ventricle ejection fraction was evaluated as 40%. Moreover, vegetation of 10 mm length and 5 mm thickness near the annulus of mechanical valve prosthesis was identified. The collected images are shown in **Figure 2A**. The vegetation did not affect the movability of valvular discs nor generate paravalvular leaks. At this stage, the patient fulfilled modified Duke criteria for definite diagnosis of IE: one major (echocardiographic findings of vegetations) and three minor (predisposing valvular abnormality, pyrexia ≥ 38°C and embolism). Because of visual disturbances intensification magnetic resonance imaging (MRI) was managed. The result is presented in **Figure 1B**. Pathological structures in the frontal, parietal and occipital lobes of the left cerebral hemisphere were identified. In addition, in the parietal lobe of the right hemisphere structure with limited diffusion was observed. Consulting radiologist suggested numerous hematomas

Table 1. Results of laboratory tests

Parameter	Admission day	Discharge day	Reference range
Haemoglobin [g/dL]	11.8	11.2	13.0–17.0
MCV [fL]	84.9	90.3	80–96
PLT [× 10^9/L]	118	270	150–410
CRP [mg/L]	296.91	22.99	0.0–5.0
PCT [ng/mL]	68.9	0.03	0.0–0.5
hsTnI [ng/mL]	12.52	0.08	< 0.0342
CK-MB [ng/mL]	3.9	–	0.0–6.6
BNP [pg/mL]	682	29	0–73
Creatinine [mg/dL]	2.68	1.21	0.73–1.18
INR	2.45	–	0.9–1.3
Na^+ [mmol/L]	139	142	136–145
K^+ [mmol/L]	4.3	5.0	3.5–5.1

MCV — mean corpuscular volume; PLT — platelets; CRP — C-reactive protein; PCT — procalcitonin; hsTnI — high sensitive troponin I; CK-MB — creatine kinase myocardial bound; BNP — B-type natriuretic peptide B; INR — international normalized ratio

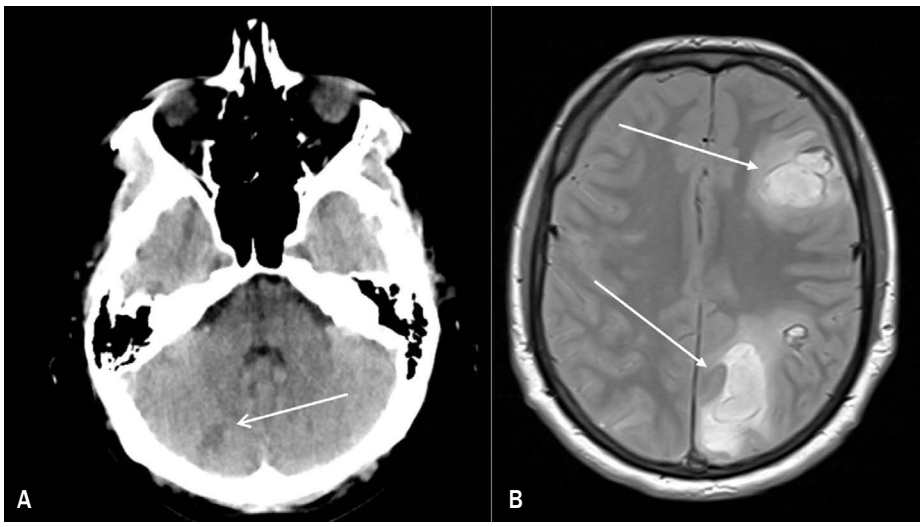

Figure 1. Results of imaging diagnostic procedures: **A.** Computed tomography (CT) — hypotensive structure in the right cerebellar hemisphere; **B.** Magnetic resonance imaging (MRI) in T2 fluid-attenuated inversion recovery (FLAIR) sequence — hyper intensive areas in the frontal and occipital lobe of the left hemisphere)

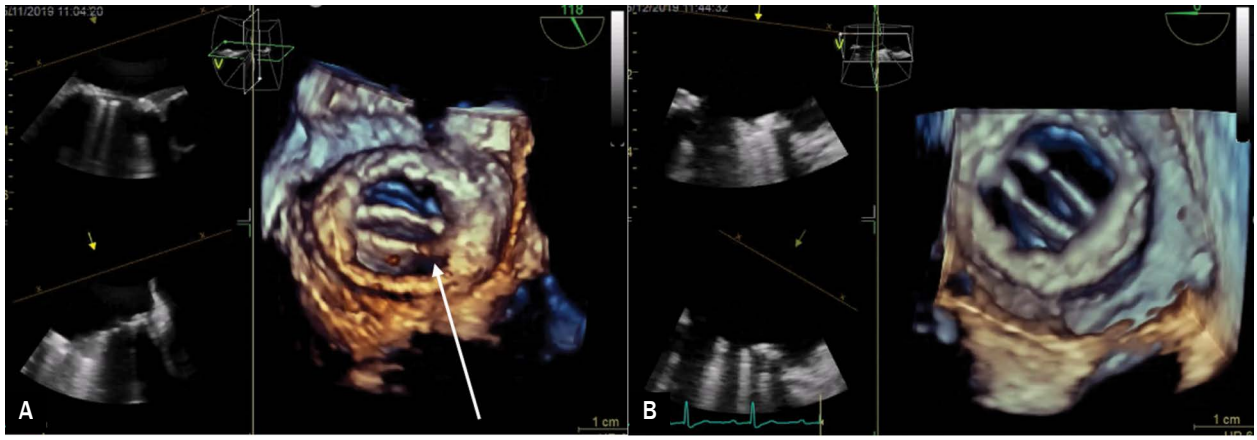

Figure 2. Results of transoesophageal echocardiography: **A.** At admission, vegetation visualised in 3D imaging; **B.** Two weeks later, no vegetation visualised in 3D imaging

in the left cerebral hemisphere and the abscess in the right cerebral hemisphere.

As a result of persistent ST-segment elevation, urgent coronary artery angiography was conducted. Because of 100% stenosis of the circumflex artery (Cx), the attempt of recanalization was managed although the result of the intervention was not satisfactory. The outcome of the intervention is shown in **Figure 3**. Due to the definite diagnosis of IE empiric antibiotic therapy with vancomycin [30 mg/kg intravenous (i.v.)/day in two doses] and gentamicin (200 mg i.v./day in one dose) was started. In consequence of cardiac surgeon consultation, the patient was disqualified from any surgical procedures. Results of microbiological tests revealed methicillin-sensitive *Staphylococcus aureus* in one of the samples. Therefore, the antibiotic treatment was modified: vancomycin was changed to cloxacillin (12 g i.v./day in four doses), moreover, ampicillin (200 mg/kg/day in four doses) was added. Both antibiotic treatment, as well as anticoagulant therapy with acenocoumarol, were being continued for two weeks of hospitalisation. In TEE managed after a few days of hospitalisation regression in vegetation dimension were detected, the maximal measurement was 3 mm. Two weeks after admission no vegetation was detected in 3D imaging (**Figure 2B**). Gradual improvement in the general condition (including regression of neurological symptoms) of the patient was observed. The patient was discharged with the following recommendations: life-long anticoagulant therapy [acenocoumarol

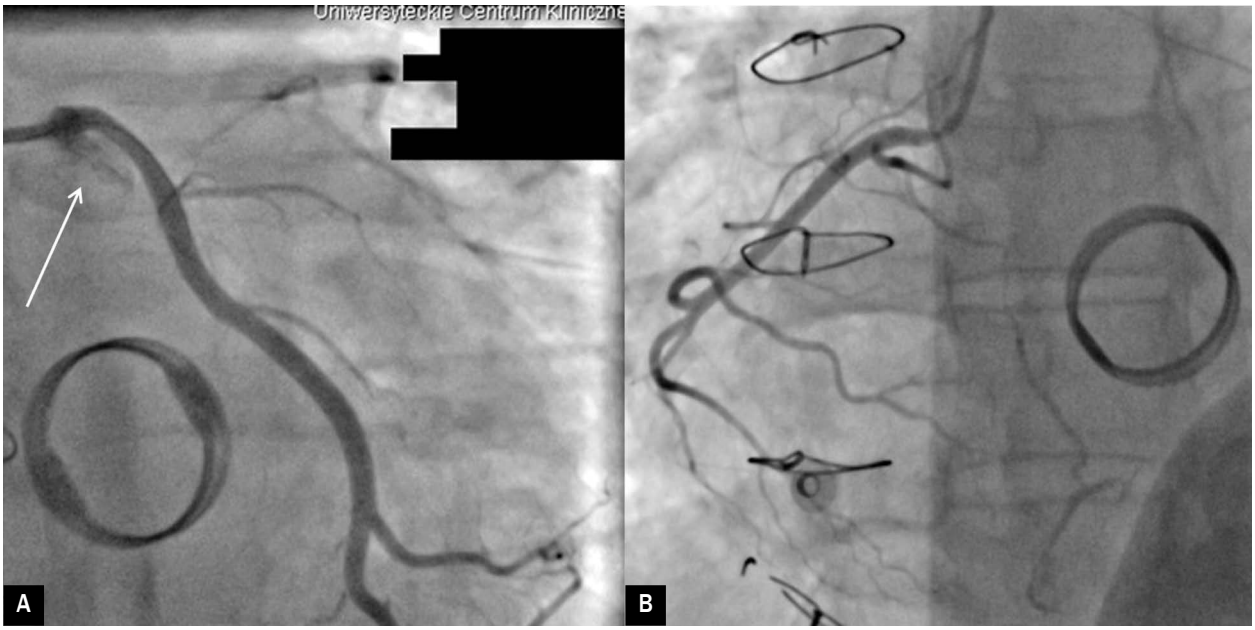

Figure 3. Coronary artery angiography: **A.** No pathological structures in left anterior descending, embolism in the proximal segment of the circumflex artery; **B.** No pathological structures in the right coronary artery

4 mg/day in one dose per os (p.o.) with timely INR tests], antibiotic therapy (amoxicillin with clavulanic acid 3 g/day in three doses p.o. until the next hospitalisation), regular treatment of Crohn's disease (mesalazine 3 g/day in three doses p.o.) and rehabilitation therapy (the term of hospitalisation was arranged two weeks after the discharge).

Discussion

Recent studies emphasize the higher incidence of IE in the group of patients with inflammatory bowel disease (IBD). Alzubi et al. [3] study based on the register from 26 United States centres revealed that 30-days risk of IE prevalence after IBD diagnosis was 0.17% in the group with Crohn's disease compared to 0.07% in the control group. Shah-Khan et al. [4] results emphasized that the prevalence of IE in the aforementioned group is still rising (from 14.5 cases per 10,000 in 2003 to 21.7 in 2014). In the reported case, the patient suffered from recurrent IE what in general supports the conclusions of the aforementioned studies. However, Bonovas et al. results suggested an increased risk of any infection after biological treatment of IBD but decreased risk of serious infections [5]. In the present case, the onset of IE with numerous complications was the result of biological and immunosuppressant treatment which stays in opposition to the outcomes of that study.

Conclusions

This patient persists at high risk of IE in the future. The crucial issue, in this case, is the coincidence of severe Crohn's disease which requires biological treatment and the prevalence of mechanical valve prosthesis which demand life-long anticoagulant therapy. Both avoidances of immunosuppressive therapy escalation and elimination of additional risk factors of IE are indispensable.

Conflict of interest

The authors declare no conflict of interest.

Streszczenie

Pacjenta w wieku 27 lat, po wymianie zastawki mitralnej z powodu infekcyjnego zapalenia wsierdzia (IE) w wywiadzie, leczonego terapią biologiczną z powodu ciężkiej postaci choroby Leśniowskiego-Crohna, przyjęto do szpitala z powodu gorączki do 40°C oraz objawów neurologicznych. Badanie elektrokardiograficzne przy przyjęciu ujawniło objawy niedokrwienia mięśnia sercowego. W wykonanej tomografii komputerowej ośrodkowego układu nerwowego stwierdzono zatory septyczne. W przeprowadzonym badaniu echokardiografii przezprzełykowej (TEE) ujawniono wegetację blisko pierścienia mechanicznej protezy zastawkowej. Angiografia tętnic wieńcowych wykonana w trybie pilnym wykazała 100-procentowe zwężenie gałęzi okalającej. Próba rekanalizacji była nieskuteczna; leczenie farmakologiczne choroby wieńcowej prowadzono zgodnie z wytycznymi. W związku z ostatecznym rozpoznaniem IE włączono antybiotykoterapię empiryczną. Terapię przeciwkrzepliwą acenokumarolem prowadzono przez całą hospitalizację. Po uzyskaniu wyników badań mikrobiologicznych krwi włączono celowaną antybiotykoterapię. Po kilku dniach hospitalizacji zaobserwowano poprawę stanu ogólnego chorego oraz regresję wegetacji w TEE.

Słowa kluczowe: infekcyjne zapalenie wsierdzia, choroba Leśniowskiego-Crohna

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References

1. Thuny F, Di Salvo G, Disalvo G, et al. Risk of embolism and death in infective endocarditis: prognostic value of echocardiography: a prospective multicenter study. Circulation. 2005; 112(1): 69–75, doi: 10.1161/CIRCULATIONAHA.104.493155, indexed in Pubmed: 15983252.
2. Habib G, Lancellotti P, Antunes M, et al. 2015 ESC Guidelines for the management of infective endocarditis. Eur Heart J. 2015; 36(44): 3075–3128, doi: 10.1093/eurheartj/ehv319.
3. Alzubi J, Zmaili M, Alkhayyat M, et al. Infective endocarditis in inflammatory bowel disease: significance and outcomes. J Am Coll Cardiol. 2021; 77(18_Suppl_1).
4. Shah-Khan SM, Shah-Khan SM, Alqahtani F, et al. Increasing rates of infective endocarditis in patients with inflammatory bowel disease. Cureus. 2020; 12(2): e6919, doi: 10.7759/cureus.6919, indexed in Pubmed: 32190474.
5. Bonovas S, Fiorino G, Allocca M, et al. Biologic therapies and risk of infection and malignancy in patients with inflammatory bowel disease: a systematic review and network meta-analysis. Clin Gastroenterol Hepatol. 2016; 14(10): 1385–1397.e10, doi: 10.1016/j.cgh.2016.04.039, indexed in Pubmed: 27189910.