

The patient with severe, complex valvular heart disease and systemic atherosclerosis

Pacjent z ciężką złożoną wadą zastawkową serca i uogólnioną miażdżycą naczyń

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Abstract

This case report presents the medical history of a 71-year-old male with heart failure, paroxysmal atrial flutter after ineffective ablation, atherosclerotic disease of coronary and peripheral arteries, and progressive valvular disease in the form of aortic valve stenosis and mitral and tricuspid regurgitation. Due to poor general condition, invasive treatment of the patient was a high-risk therapy. At first, the patient was disqualified from the cardiosurgical treatment of valvular disease, and the decision was made to perform balloon aortic valvuloplasty and surgically treat peripheral artery disease.

Then, after the clinical condition improved, the patient was eventually qualified for implantation of the aortic valve and surgical repair of the mitral and tricuspid valve which was complicated by cardiorespiratory failure. Because of that, the patient was hospitalized in the intensive care unit for 23 days.

A year after that surgery patient had an episode of circulatory arrest and implantation of a cardioverter-defibrillator was performed. The patient is currently stable and he is in generally good condition, with heart failure in New York Heart Association class III. The decision is made to qualify him for left atrial appendage closure to prevent stroke and systemic thromboembolism.

Key words: atherosclerotic disease, peripheral artery disease, valvular disease, atrial flutter

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Introduction

Valvular heart disease is a cardiovascular condition that occurs when one or more heart valves do not work and is an increasing healthcare burden with an incidence of over 10% of individuals older than 65 years of age in Europe [1]. The disease accounts for 10% of cardiac surgeries in the United States [2]. Advanced heart valve disease can cause cardiac failure, stroke or death due to sudden cardiac arrest. Atherosclerotic disease is a chronic systemic

disease and a major cause of vascular death. In 2010 in the United Kingdom the probability of death from vascular disease in middle-aged men (35–69 years) was 6% [3]. Approximately in many cases, significant coronary, carotid, and peripheral artery stenosis, co-occur [4].

Case report

A 71-years-old man with paroxysmal atrial flutter after ineffective ablation of the cavotricuspid isthmus was admitted

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to the Department of Cardiology for left atrial appendage closure. The medical history revealed a high burden of cardiovascular diseases – anterior myocardial infarction, left heart failure with reduced ejection fraction (New York Heart Association class III), peripheral artery disease (the patient was disqualified from the revascularization due to a severe cardiological condition), hypertension, anemia requiring systematic blood transfusions for 4 years, diabetes type 2.

In 2015, the patient was admitted to the department of cardiology due to exacerbation of severe, treatment-resistant heart failure. The progressive valvular disease was diagnosed in form of – aortic valve stenosis (aortic valve area [AVA] 0,7–0,8 cm²), mild mitral regurgitation, and intermediate tricuspid regurgitation with a left ventricular ejection fraction of 25%.

In October 2015, due to poor general condition, the patient was disqualified from the cardiosurgical treatment of valvular disease. After two months the patient underwent coronary angiography which showed: 100% obstruction of the left anterior descending coronary artery, 75% obstruction of a right coronary artery, 40–50% obstruction of circumflex artery, and diagonal branches in the initial segment. The cardiac surgery consultation took place and invasive treatment of the patient has been recognized as a high-risk therapy. In April 2016 the patient was treated by the percutaneous coronary intervention of the right coronary artery with implantation of a drug-eluting stent. In February 2016 the patient has not agreed to the cardiosurgical treatment although he was qualified for transcatheter aortic valve implantation (TAVI) procedure. In May 2016 TAVI procedure was not performed due to a significant decrease in hemoglobin level (over 3 months from 12.9 g/dL to 6.1 g/dL) and unclear history of gastrointestinal bleeding. In June 2016 percutaneous balloon aortic valvuloplasty (BAV) was performed to improve the patient's quality of life. In September 2016 – the patient agreed to cardiac surgery. Biological aortic valve prosthesis was grafted, mitral and tricuspid valvuloplasty was performed and because of the co-occurrence of chronic coronary artery disease, coronary artery bypass grafting (CABG) [left internal mammary artery–left arterial descending (LIMA–LAD), saphenous vein–obtuse marginal (SV–OM)] was performed. Surgery was complicated by cardiorespiratory failure. Because of that, the patient was hospitalized in the intensive care unit for 23 days.

Due to cardiac arrest in 2017, the patient had an implantable cardioverter-defibrillator (ICD) implanted which was modified to cardiac resynchronization therapy with defibrillator (CRT-D) in 2019. Due to anemia diagnosed for 4 years, the patient needed a regular blood transfusion. In the duodenum, the presence of angiectasias was confirmed. The patient suffers from paroxysmal atrial flutter and requires anticoagulants but because of gastrointestinal

bleedings, he was qualified for the closure of the left atrial appendage.

The patient underwent the closure of the left atrial appendage. The procedure was performed to protect the patient from thromboembolic complications. After the procedure, the patient must take dual antiplatelet therapy (acetylsalicylic acid [ASA] + clopidogrel) for 6 months and then take ASA alone for another 6 months. The patient now is in generally good condition. Due to intermittent claudication and short pain-free walking distance (100 m) and absence of severe cardiological contraindications, vascular surgeon consultation was recommended.

Discussion

The presence of multiple cardiac diseases and the general condition of the patient makes the management of such a patient evasive. The coexistence of valvular defects, ischemic heart disease, arrhythmia, and high risk of bleeding were the reasons for the initial disqualification of the patient from cardiac surgery and made palliative treatment necessary. To prolong the patient's life, it was decided that he should undergo percutaneous balloon valvuloplasty. Subsequently, after the patient's clinical condition improved, cardiac surgery was performed, which was successful. Percutaneous closure of the left atrial appendage was performed to significantly reduce the risk of thromboembolic complications of atrial flutter. Results of the randomized controlled PROTECT AF study using the WATCHMAN device demonstrated left atrial appendage occlusion (LAAO) to be non-inferior to warfarin in the prevention of ischaemic stroke [5]. Results from a large multicenter cohort implanted with the AMP-LATZER Cardiac Plug showed that LAAO is the therapeutic method that reduces the bleeding rate [6]. According to European Society of Cardiology (ESC) 2016, this procedure is indicated for patients at high risk of bleeding and thromboembolic complications. The therapy of patients with so many comorbidities is long and multi-step. It is extremely important to continuously work with the patient to strive for overall well-being and maximize patient survival.

Conclusions

This case report illustrates therapeutic challenges in managing patients with co-occurrence of advanced valvular heart disease, atherosclerotic disease, and cardiac failure. An individual approach and adjustment to the patient's current condition are essential. Managing such a patient goes beyond guidelines and standards of practice. The presence of many various cardiovascular diseases not only affects the prognosis and the quality of life of the patient but also make therapeutic management more difficult.

Conflict of interest

The authors declare no conflict of interest.

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Streszczenie

W niniejszym opisie przypadku przedstawiono historię choroby 71-letniego mężczyzny z niewydolnością serca, napaadowym trzepotaniem przedsionków po nieskutecznej ablacji, chorobą miażdżycową tętnic wieńcowych i obwodowych oraz postępującą chorobą zastawkową pod postacią zwężenia zastawki aortalnej i niedomykalności zastawki mitralnej i trójdzielnej. Ze względu na zły stan ogólny leczenie inwazyjne chorego było terapią wysokiego ryzyka. Początkowo pacjenta zdyskwalifikowano z leczenia kardiochirurgicznego choroby zastawkowej i podjęto decyzję o wykonaniu balonowej walwuloplastyki zastawki aortalnej.

Ostatecznie chorego zakwalifikowano do implantacji zastawki aortalnej oraz chirurgicznej naprawy zastawek mitralnej i trójdzielnej. Zabieg był powikłany niewydolnością krążeniowo-oddechową, z powodu której chory był hospitalizowany na oddziale intensywnej terapii przez 23 dni.

Rok po operacji doszło do epizodu zatrzymania krążenia, w związku z czym wykonano zabieg implantacji kardiowertera-defibrylatora. Obecnie pacjent jest w dobrym stanie ogólnym, z niewydolnością serca w III klasie według Nowojorskiego Towarzystwa Kardiologicznego. Ze względu na utrwalone trzepotanie przedsionków w celu zapobiegania incydentom zakrzepowo-zatorowym podjęto decyzję o wykonaniu zabiegu zamknięcia uszka lewego przedsionka.

Słowa kluczowe: miażdżyca tętnic, choroba naczyń obwodowych, niewydolność zastawek, trzepotanie przedsionków

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