



Kasuistika | Case report

Surgical management of idiopathic constrictive pericarditis

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SOUHRN

Konstriktivní perikarditida je definována jako porucha srdeční funkce v diastole vedoucí k rozvoji srdečního selhání, postupnému přetížení tekutinami, systémovému žilnímu městnání a snížení srdečního výdeje. I když konstriktice postihuje obě komory, převládají symptomy pravostranného srdečního selhání. Při konstriktivní perikarditidě se lze setkat s městnavým srdečním selháním i s normální systolickou funkcí levé komory. Za hlavní metodu léčby konstriktivní perikarditidy se považuje perikardiektomie. V tomto článku popisujeme případ úspěšné perikardiektomie provedené u 68leté ženy.

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ABSTRACT

Constrictive pericarditis is defined as impaired diastolic cardiac function leading to heart failure, progressive fluid overload, systemic venous congestion and reduction of cardiac output. Both ventricles affected by the constriction, however, symptoms of right heart failure dominate. The congestive heart failure and normal left ventricular systolic functions are seen in the presence of constrictive pericarditis. Pericardiectomy is considered as the mainstay treatment method for constrictive pericarditis. Here we present successful pericardiectomy of a 68-year-old female.

Introduction

Chronic fibrous thickening and calcification of the pericardium leads to constrictive pericarditis. Major causes include tuberculosis, idiopathic, neoplasm, prior cardiac surgery, non-tuberculosis bacterial infections, viral infections, mediastinal post-radiotherapy, uraemia, connective tissue diseases, sarcoidosis, blunt chest trauma and miscellaneous. Patients who could not be classified into any of these groups described as idiopathic constrictive pericarditis. Constrictive pericarditis is defined as impaired diastolic cardiac function leading to heart failure, progressive fluid overload, systemic venous congestion and reduction of cardiac output. Main symptoms include advanced New

York Heart Association (NYHA) functional class, peripheral edema, distended jugular veins, hepatomegaly, ascites, pleural effusions, chest pain, abdominal symptoms, cardiac tamponade, atrial arrhythmia and frank liver disease [1]. Transthoracic echocardiography, transesophageal echocardiography, right-heart catheterization, chest radiography, computed tomography and magnetic resonance imaging are used for diagnosing. Clinical factors are including age, sex, hypertension, diabetes mellitus, dyslipidemia, coronary artery disease and atrial fibrillation. Systolic blood pressure, systolic pulmonary artery pressure, mean right-atrial pressure, mean pulmonary capillary wedge pressure, cardiac output, and the cardiac index should be evaluated during cardiac catheterization. Preo-

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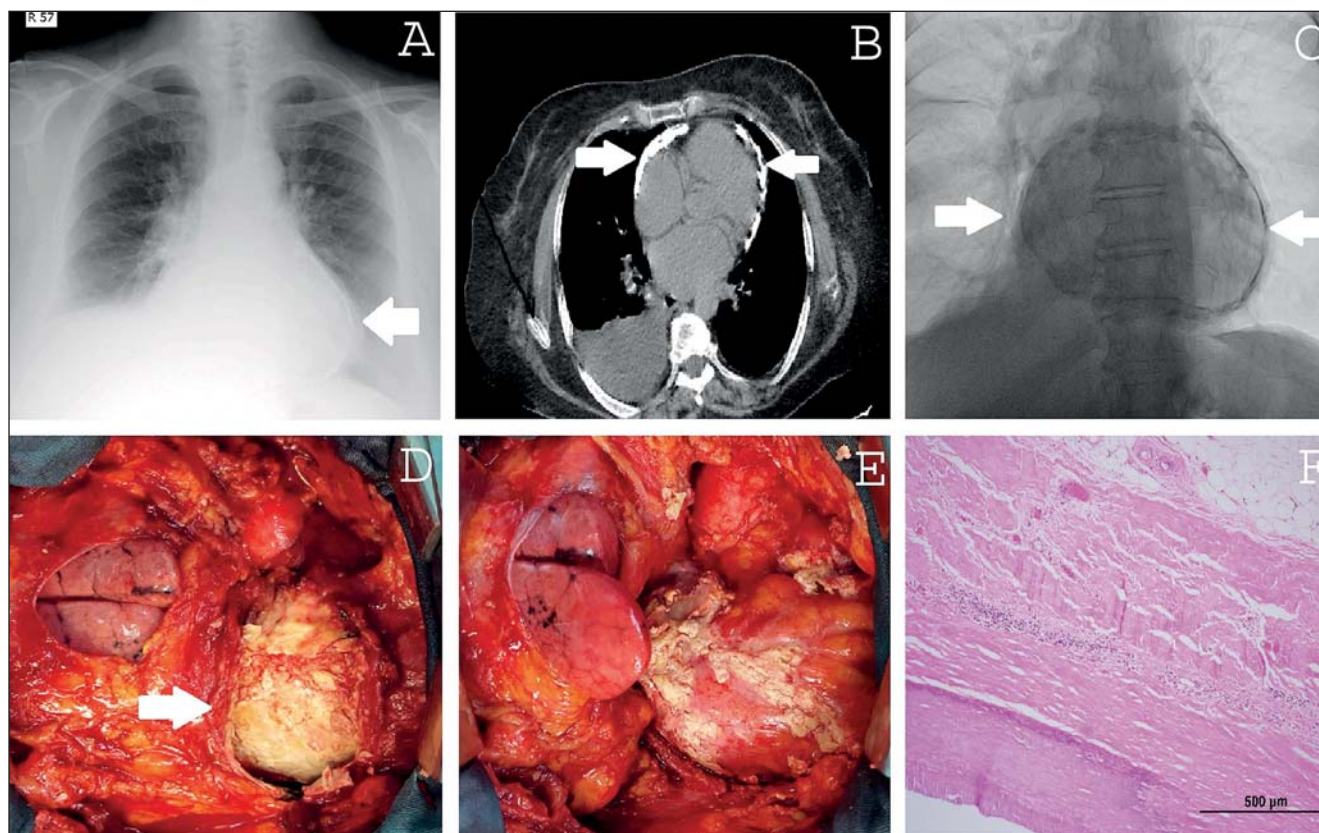


Fig. 1 – Pericardial calcification on the chest X ray (A), heavy pericardial calcifications on the computed tomography (B), pericardial calcifications on the right heart catheterisation (C), intra-operative image of the completely pericardial calcification (D), intra-operative image after the subtotal total pericardiectomy (E) and pathological examination of the tissue (F).

perative atrial fibrillation, advanced age, advanced New York Heart Association functional class and pulmonary hypertension are related to poor clinical outcomes. Long-term clinical outcomes are related with the etiology. Pericardiectomy is considered as the mainstay treatment method for constrictive pericarditis. Post-pericardiectomy mortality rate varies between 6% and 16% [2].

Case report

A 68-year-old woman was presented with respiratory distress, complaining of orthopnea (NYHA class 2–3) and paroxysmal nocturnal dyspnea, predominantly right-sided heart failure and extensive peripheral edema of 6-month duration was admitted to us. She had a history of long-standing hypertension, chronic obstructive pulmonary disease. Her blood pressure was 125/85 mmHg and heart rate was 95 bpm. On physical examination jugular venous distension was detected. However, the patient had no history of cardiac surgery, chest radiation or tuberculosis. Complete blood count and basic metabolic panels were within normal limits. Chest X-ray demonstrated pericardial calcifications, right sided pleural effusions and widened mediastinum (Fig. 1A). CT demonstrated 15 mm pericardial thickening and right sided pleural effusion (Fig. 1B). Transthoracic echocardiogram showed 70% left ventricle ejection fraction, normal left ventricle diameter

and wall motion, dilated right ventricle, right atrium and left atrium, mild mitral regurgitation, moderate tricuspid regurgitation and respiratory interventricular septal shift and high pulmonary artery pressure (50 mmHg). Right heart catheterisation showed elevation and equalisation of diastolic pressures in all cardiac chambers with early rapid filling (Fig. 1C). Routine preparation for surgery was made and a written informed consent was obtained from the patient. Under general anesthesia we reached the pericardium via standard median sternotomy (Fig. 1D). Subtotal pericardiectomy was successfully achieved between the both phrenic nerves by blunt and sharp dissections (Fig. 1E). We completed the procedure with an off-pump manner. Central venous pressure decreased from 22 to 12 mmHg following the procedure. Total postoperative mediastinal drainage was 250 ml. The result of the pathology examination confirmed the diagnosis of constrictive pericarditis by the pericardial fibrosis (Fig. 1F). Six months later she was doing well with stable vital signs.

Discussion

Physical examination findings are elevated jugular venous pressure, edema, ascites, pulsus paradoxus, Kussmaul's sign (paradoxical rise in jugular venous pressure on inspiration) and pericardial knock however, dyspnoea and edema are the most common complaints of the patients.

Both ventricles affected by the constriction however, symptoms of right heart failure dominate. The congestive heart failure and normal left ventricular systolic functions are seen in the presence constrictive pericarditis [3]. Discrimination between the restrictive cardiomyopathies and constrictive pericarditis is essential. Long-term survival after surgery is dependent on the etiology and completeness of the resection. Malignancies, diminished cardiac output, reoperation and post radiotherapy have higher mortality rates. Lung and breast cancers are the most frequent causes of malignant pericardial disease. Computed tomography is superior for assessment of pericardial calcification, thickening and deformation of the ventricles [4]. Reciprocal mitral flow changes, expiratory diastolic flow reversal in the hepatic veins, pericardial thickening, paradoxical septal motion, inferior vena cava dilation, left ventricular systolic and diastolic functions can be analyzed by echocardiography. Wide excision of the pericardium from one phrenic nerve to the other, including the diaphragmatic side is recommended [5]. Cardiopulmonary bypass was not routinely performed except hemodynamic deterioration, epicardial bleeding and laceration or in need of coronary artery bypass grafting, valve replacement or both. Pre operative advanced New York Heart Association functional class, pericardial calcification, hepatomegaly, renal failure, and pulmonary hypertension are related of poor outcome after surgery.

In conclusion, pericardiectomy is associated with high morbidity and mortality rates however, should be performed before multi-organ dysfunction and reversible myocardial dysfunction occur when diagnosed.

Conflict of interest

The authors declared no conflict of interest with respect to the authorship and/or authorship of this article.

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Ethical statement

Authors state that the research was conducted according to ethical standards.

Informed consent

Authors declare that informed consent was obtained from the patient participating in this study.

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