

Chronic Postpericardiotomy Syndrome and Cardiac Tamponade Lasting for Two Years after Open Heart Surgery

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Postpericardiotomy syndrome (PPS) is a major cause of morbidity after cardiac surgery and may cause bypass graft closure and fatal cardiac tamponade. Treatment modalities include nonsteroidal antiinflammatory drugs, corticosteroids, diuresis, drainage, and pericardiectomy in severe cases. Usually the syndrome lasts weeks only, and persistence beyond six months is exceptional. We describe a 64-year-old male patient of chronic PPS, with persistent pericardial effusions and tamponade lasting for two years after an initial open heart surgery. The patient was treated successfully with thoracoscopic partial pericardiectomy and low-dose maintenance steroids and colchicine for two months.

Key Words: Cardiac tamponade • Open heart surgery • Pericardiectomy • Postpericardiotomy syndrome • Thoracoscopic surgery

INTRODUCTION

Chronic (> 3 months) pericarditis includes effusive (inflammatory or hydropericardium in heart failure), adhesive, and constrictive forms. Chronic pericardial effusions are sometimes encountered in patients without an antecedent history of acute pericarditis. Symptoms of chronic pericarditis are usually mild (chest pain, palpitations, fatigue), related to the degree of cardiac compression. The etiologies of pericarditis include infectious pericarditis, pericarditis in systemic autoimmune diseases, type 2 (auto)immune process, pericarditis and pericardial effusion in diseases of surrounding organs, pericarditis in metabolic disorders, traumatic pericarditis, neoplastic pericardial disease, and idiopathic pericarditis.¹

Postpericardiotomy syndrome (PPS), also named postcardiotomy syndrome, can be classified as a specific form of traumatic pericarditis, and is characterized by pericardial and/or pleural effusion days to weeks after an open heart surgery. Well known to all cardiac surgeons, it is one of the most common complications after open heart surgery. PPS usually only lasts weeks; persistence beyond six months is exceptional.² Failure to identify the relationship between the antecedent cardiac operation and the occurrence of the pericardial effusion often results in misdiagnosis.

Here we present a rare case of chronic PPS and cardiac tamponade lasting for two years after an initial open heart surgery.

CASE REPORT

A 64-year-old man was admitted to the cardiology service presenting with congestive heart failure, NYHA Fc III. He had undergone a mitral valve repair because of severe mitral regurgitation with congestive heart failure 25 months prior to this admission in another hospital. He was discharged home with good symptomatic relief three

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months after the operation and was lost to follow-up one month later. The patient started to suffer exercise intolerance and leg edema several months after his discharge. The symptoms waxed and waned, and he sought medical attention only when the symptoms were severe and intolerable. He had been informed that there was some degree of pericardial effusion. No definite diagnosis was achieved, and the treatment consisted of aggressive diuresis only. Though he had hypertension and chronic atrial fibrillation, he didn't receive antihypertensive agents and was not anticoagulated.

The physical findings included jugular vein engorgement, a remote heart sound and marked leg edema. The heart rhythm was irregularly irregular, and there was no heart murmur. The chest film showed a flask-shaped silhouette (Figure 1). Echocardiography demonstrated a competent mitral valve, a left ventricular ejection fraction (LVEF) of 43%, and large amount of pericardial effusion. The hemogram and blood chemistry study were normal except for the elevated serum blood urea nitrogen and creatinine level (BUN 43 mg/dL and Cre 2.7 mg/dL).

Pericardiocentesis revealed 2000 mL of serosanguinous pericardial fluid. The laboratory studies were consistent with an exudate, and the bacterial and tuberculosis cultures were negative. Cytology study was negative for malignancy. The patient was diagnosed with chronic effusive pericarditis and was discharged prescribed 10 mg of prednisolone twice daily.

He was referred to the cardiac surgical service one month later presenting with massive pericardial effusion and cardiac tamponade. Thoracoscopic partial pericardiectomy (without thoracotomy) through the right thorax was carried out, and 1000 mL of serosanguinous pericardial fluid was evacuated. The pericardial fluid was an exudates, and the pathology of the pericardium was chronic inflammation. Since there was an antecedent open heart operation and there had been chronic pericarditis and pericardial effusion, we concluded that the final diagnosis was "chronic PPS". The patient was treated postoperatively with 5 mg of prednisolone twice daily, 25 mg of indomethacin and 5 mg of colchicine daily for two months. It's now 6 months after the operation, and there is no evidence of recurrence of pericardial effusion (Figure 1). The latest laboratory data suggested improved renal function (BUN 26 mg/dL and Cre 2.0 mg/dL).

DISCUSSION

Postpericardiotomy syndrome (PPS) with pericardial and/or pleural effusion, well known to all cardiac surgeons, is one of the most common complications after open heart surgery. It is a complication of any cardiac surgery or procedure involving entry into the pericardium. The syndrome presents as a delayed pleural or pericardial reaction, characterized by fever, chest pain,

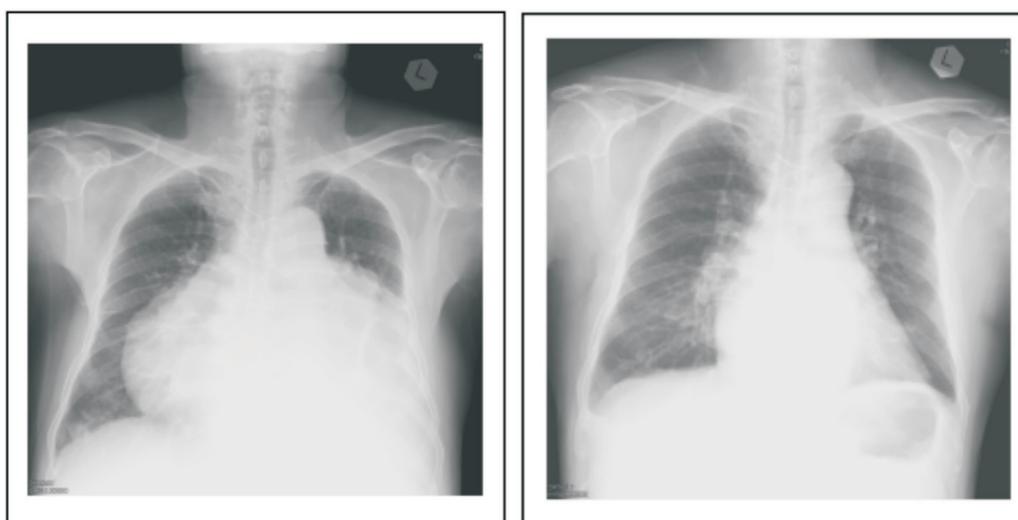


Figure 1. Left: a preoperative flask-shaped cardiac silhouette; Right: a postoperative chest film.

and a friction rub.³⁻⁵ The incidence of PPS varies a lot. Though early works by Miller et al. following 944 consecutive patients undergoing open heart surgery between November 1984 and November 1985 suggested an overall incidence of 17.8%,⁶ Kuvin et al. demonstrated in their large series that few pericardial effusions progress to become hemodynamically significant and result in cardiac tamponade. Only 1% of their 4,561 patients were found to have echocardiographic evidence of a moderate or large pericardial effusion, and of these 1% of patients, 74% had evidence of cardiac tamponade. They also showed that cardiac tamponade after open heart surgery is more common following valve surgery than coronary artery bypass surgery.⁷

Although the disease is self-limiting, its duration is highly variable, with a median of 22 days and a range of 2 to 100 days in a study by Nishimura and colleagues. They also indicated that PPS is a benign but often recurrent clinical entity, presumably related to viral and/or immunologic factors. Five out of their 34 patients had recurrences at an interval of 3 to 30 months.⁸ Usually, PPS only lasts for weeks, and persistence beyond six months is exceptional.² Nevertheless, failure to identify the relationship between the antecedent operation and the occurrence of the pericardial effusion often results in misdiagnosis.

The pain and effusions are often relieved by bed rest and aspirin or nonsteroidal antiinflammatory drugs. When symptoms persist, and once the diagnosis is secure and infection has been excluded, prednisolone may be given initially in high dosage (40 mg/day), gradually reduced, and completely discontinued within 4 to 8 weeks.⁹ In two recent works, colchicine has been demonstrated to be an adjunct to conventional treatment for recurrent pericarditis,¹⁰ and prevention of PPS.¹¹

When symptoms are important and persist despite 7 to 10 days of intensive medical treatment, or when acute pericardial tamponade develops, operation is indicated. Techniques of operation include pericardiocentesis, subxiphoid pericardial window, percutaneous balloon pericardiectomy, pericardial window via left anterolateral approach, and partial or complete pericardectomy.¹² In patients who can tolerate single-lung ventilation, video-assisted thoracic surgery (VATS) pericardial resection offers definitive and durable treatment without the morbidity of an open thoracotomy.¹³

Briefly speaking, our patient underwent a mitral valve repair for severe mitral regurgitation and congestive heart failure. He had good symptomatic relief when he was discharged, but started to have exercise intolerance several months later. Because of the insidious course, no definite diagnosis was achieved until frank cardiac tamponade overwhelmed 25 months after the initial open heart surgery. Once the diagnosis was confirmed and definite treatments (pericardiectomy, nonsteroid anti-inflammatory drugs, steroids, and colchicines) were administered, the patient recovered soon. In conclusion, we have reported a rare case in which the postoperative pericardial inflammation process persisted for 25 months. This suggests that PPS should always be considered as an important differential diagnosis once there is pericardial effusion after an open heart surgery.

REFERENCES

1. Maisch B, Seferovif PM, Ristif AD, Erbel R, et al. Guidelines on the diagnosis and management of pericardial disease: executive summary. *Eur Heart J* 2004;25:587-610.
2. Zucker N, Levitas A, Zalstein E. Methotrexate in recurrent postpericardiectomy syndrome. *Cardiol Young* 2003;13(2):206-8.
3. Kronick-Mest C. Postpericardiectomy syndrome: etiology, manifestations, and interventions. *Heart Lung* 1989;18(2):192-8.
4. Zeltser I, Rhodes LA, Rhodes LA, Tanel RE, et al. Postpericardiectomy syndrome after permanent pacemaker implantation in children and young adults. *Ann Thorac Surg* 2004;78(5):1684-7.
5. Levelli FD Jr, Johnson RA, McEnany MT, et al. Unexplained in-hospital fever following cardiac surgery. Natural history, relationship to postpericardiectomy syndrome, and a prospective study of therapy with indomethacin versus placebo. *Circulation* 1978;57(5):968-75.
6. Miller RH, Horneffer PJ, Gardner TJ, et al. The epidemiology of the postpericardiectomy syndrome: a common complication of cardiac surgery. *Am Heart J* 1988;116(5):1323-9.
7. Kuvin JT, Harati NA, Pandian NG, et al. Postoperative cardiac tamponade in the modern surgical era. *Ann Thorac Surg* 2002;74(4):1148-53.
8. Nishimura RA, Fuster V, Burgert SL, Puga FJ. Clinical features and long-term natural history of the postpericardiectomy syndrome. *Int J Cardiol* 1983;4(4):443-54.
9. Postoperative care. In: Kouchoukos NT, Blackstone EH, Doty DB, et al, Eds. *Cardiac Surgery*. 3rd ed. Philadelphia: Churchill Livingstone, 2003:232-33.

10. Adler Y, Finkelstein Y, Guindo J, et al. Colchicine treatment for recurrent pericarditis. A decade of experience. *Circulation* 1998; 97:2183-85.
11. Finkelstein Y, Shemesh J, Mahlab K, et al. Colchicine for the prevention of postpericardiotomy syndrome. *Herz* 2002;27(8): 791-94.
12. Pericardial disease. In: Kouchoukos NT, Blackstone EH, Doty DB, et al, Eds. *Cardiac Surgery*. 3rd ed. Philadelphia: Churchill Livingstone, 2003:1790-92.
13. Flores RM, Jaklitsch MT, DeCamp MM Jr, Sugarbaker DJ. Video-assisted thoracic surgery pericardial resection for effusive disease. *Chest Surg Clin N Am* 1998;8(4):835-51.

開心手術後持續兩年之慢性心包膜切開後徵候群併 心包填塞

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心包切開後徵候群是心臟手術後一個麻煩的併發症，有時會導致繞道血管阻塞或心包填塞。治療方式包括非類固醇消炎藥、類固醇、利尿劑、引流及心包膜切除等。通常此徵候群僅持續數週，很少超過六個月。我們在此報告一個 64 歲男性病患，其心包切開後徵候群及心包填塞在心臟手術後持續二年。我們以胸腔鏡心包膜切除、類固醇及秋水仙素成功治癒該病患。

關鍵詞：心包填塞、開心手術、心包切除術、心包切開後徵候群、胸腔鏡手術。