

Survival post surgery for malignant pericardial effusion

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Abstract

The study reviews the survival of patients with malignant pericardial effusion treated with a subxiphoid pericardial window. The medical records of 60 consecutive patients diagnosed with a malignant pericardial effusion and treated with a subxiphoid pericardial window between 1994 and 2008 were reviewed. 72% had lung cancer. Overall 30-day mortality was 31%. Survival rates at 3 months, 6 months, 1 year, and 2 years were 45%, 28%, 17%, and 9%, respectively. Overall median survival was 2.6 months.

Patients with malignant pericardial effusion, especially those with primary lung cancer have poor survival rates. In advanced malignancy, the subxiphoid pericardial window procedure provides only short-term palliation of symptoms, and has no effect on long-term survival. The use of any surgical procedure in patients with malignant advanced pericardial effusion should be considered along with non-surgical options on a case-by-case basis depending on symptoms, general status, and expected survival.

Introduction

Symptomatic malignant pericardial effusion is found predominantly in patients with lung, breast, and hematologic malignancies, while benign pericardial effusion is usually idiopathic, caused by infection, or secondary to radiation and drugs used in the treatment of cancer. Case series have reported that malignancy accounts for up to 23% of pericardial effusions and up to 33% of symptomatic pericardial effusions.^{1,2} Clinical presentation is often subtle at first, tamponade with hemodynamic compromise may occur and result in premature death. Surgical pericardial window has largely been accepted as a simple, safe, and effective procedure, and the standard method for long-term drainage of pericardial effusion. Several surgical approaches to pericardial windows have been utilized over time. These include the subxiphoid,^{3,4} laparoscopic, thoracoscopic, pericar-

dioscopic, percutaneous balloon window, open-thoracotomy, and sternotomy approaches. The choice depends on the surgeon personal experience, the general state of the patient, and the current therapeutic trend.

Given the limited life expectancy of patients with malignant diseases, the challenge for the clinician is to determine the long-term benefits of a surgical intervention. Even though immediate and short-term palliation is obtained by creating a surgical pericardial window, long-term survival of patients with major co-morbidities and/or widespread metastatic involvement may not be improved by surgery. Similar results may be achieved by non-surgical intervention, such as repeated pericardiocentesis, pericardial catheter and chemical sclerosis.

The objective of this study is to review the survival of patients treated with a subxiphoid pericardial window. A secondary objective is to provide concrete data to better assist the surgeon, the patient, his or her family, and referring physician in making an informed decision regarding available treatments.

Materials and Methods

In this study, we retrospectively reviewed the medical records of 60 consecutive patients based on a prospective database who underwent a surgical pericardial window for pericardial effusion. All patients were operated by either one of three surgeons in a university-affiliated hospital, between February 1994 and November 2008. All pericardial effusions were confirmed by preoperative echocardiography. We collated the following data: age, sex, history of cancer, co-morbidities, symptoms at presentation, temporary treatment with preoperative pericardiocentesis or pericardial catheters, date of surgery, cytology studies of the aspirated pericardial fluid, histology examinations of the excised pericardium. Our primary end-points were post-operative complications and survival.

Surgical technique

We have chosen the subxiphoid approach because of simplicity, practicality, and local expertise.

Follow-up

Overall survival was calculated from the date of surgery (pericardial window) to the end of the study period or death.

Results

The group included 33 female patients

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(55%) and 27 male patients (45%) with a mean age of 60 years (age range: 40 to 82 years). Fifty patients (83%) presented with clinical symptoms, including isolated dyspnea (n=23), pre-tamponade (n=15), and cardiac tamponade (n=25) defined as the presence of right atrial and ventricular collapse at echocardiography. Forty-six patients (77%) benefited from rapid relief of symptoms after drainage by pericardiocentesis with or without insertion of a pericardial catheter.

The underlying cause of pericardial effusion was confirmed in most cases by pre- and/or intra-operative cytological study of aspirated pericardial fluid and histological examination of the excised pericardium. In 25 patients (42%), cytological studies alone were positive for malignant cells; these results were confirmed in another seven patients (12%) by histological studies of the resected pericardium. The primary malignancy was located in the lung in the majority of patients (n=43), and the origin was unknown in four patients (Table 1).

Thirteen patients (22%) had surgical complications, which consisted of atrial fibrillation (n=6), pneumothorax (n=1), thrombocytopenia (n=1), supraventricular tachycardia (n=1), delirium (n=2) and cardiac laceration (n=1). This last complication was repaired successfully. Two patients required a second pericardial window for recurrent effusion. There was one (2%) in-hospital death resulting from a postoperative complication in one of the patients who underwent a second pericardial window for recurrence. Overall 30-day mortality was 31% (n=18) and 30% (n=13) in patients with lung cancer (Table 2). Overall survivals at 3 months, 6 months, 1 year and 2 years were 45% (n=27),

28% (n=16), 17% (n=10), and 9% (n=5), respectively. In patients with lung cancer, the corresponding survivals were 40% (n=16), 26% (n=10), 15% (n=6), and 8% (n=3), respectively. The overall post-operative median survival was 2.6 months, 2.1 months for patients with lung cancer, and 4.7 months for those with other malignancies. Range was from 0 to 66 months (Figure 1).

Discussion

Malignant pericardial effusion appears in up to 15% of patients with advanced malignancies.⁵ According to literature, metastasis to the pericardium represents a contributive cause of death in 86% of patients with symptomatic peri-

cardial effusion.⁶ Advanced lung cancer is the predominant cause of metastatic involvement of the pericardium. In our patient population, 72% of patients with pericardial effusion had lung cancer.

Survival rates are consistently poor in patients with malignancy who present with a pericardial effusion. In our series, patients had a median survival of 2.6 months. Patients with lung cancer had a median survival of 2.1 months while those with other types of cancer of 4.7 months. As in other studies, patients with lung cancer and pericardial effusion had the worst prognosis.^{7,8} In this study, only 17% of patients survived the first year after surgical intervention, which includes 15% of patients with lung cancer. Other case studies report survival rates at 1 year of 25%,⁹ and for lung cancer patients of 10.5%.¹⁰

Pericardiocentesis provides immediate palliation of symptoms and has a small rate of major complications, including ventricular puncture, cardiac tamponade, arrhythmia, and cardiac arrest.⁹ Pericardiocentesis alone was not previously considered as a definite method of treatment for pericardial effusion as it had been associated with a rate of recurrence of up to 90% at 3 months.⁷ Its complications have been reduced to 1.5% by echocardiography-guidance and the recurrence rate of pericardial effusion was lowered to 40% at 6 months.⁸

Alternative therapies include local sclerosing of the pericardium by instillation of a chemical agent through a pericardial catheter.¹¹⁻¹⁴ Martinoni reports an absence of pericardial effusion at 30 days after drainage and sclerosis in 70-90% of treated patients.¹⁴ Maher favors drainage and sclerosis over surgical drainage alone pointing that this procedure offers similar survival with lower morbidity, mortality, and recurrence rates, and mentions that the surgical option should be reserved to pericardial effusion refractory to the sclerosing therapy.¹²

In conclusion, pericardial window for malignant pericardial effusion only provides short-term palliation. It must be clearly understood by the patient and the consulting medical service that the surgical intervention will not affect the long-term survival in these already frail patients who may not be able to tolerate the additional surgical stress. The use of the pericardial window procedure in patients with advanced malignancy should be considered on a case-by-case basis depending on the symptoms, general status of the patient, and expected survival. We finally recommend an honest and open discussion with the patient, his or her family, and the referring physician to make an informed decision regarding all available surgical and non-surgical treatments. We propose as treatment algorithm: i) pericardiocentesis with or without an indwelling catheter, ii) followed by chemical pericardial symphysis with a sclerosing agent, iii) and finally a subxiphoid pericardial window

for recurrence.

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Table 1. Origin of malignancy in patients with malignant pericardial effusion.

Site of primary tumor	No.	%
Lung	43	72
Unknown	4	7
Esophagus	3	5
Breast	2	3
Other cancer	8	13

Table 2. 30-day mortality.

	30-day mortality	
	No.	%
Overall	18	31
Lung	13	30
Unknown	1	25
Esophagus	2	67
Breast	0	0
Other cancer	2	25

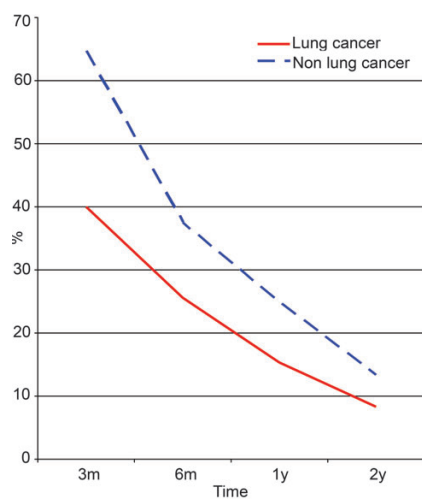


Figure 1. Survival rates (lung vs non lung cancer).