

การรักษาภาวะของเหลวปริมาณมากขังในช่องเยื่อหุ้มหัวใจ

สมชาย ไวกิตติพงษ์

Management of Massive Pericardial Effusion.

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บทคัดย่อ:

บทนำ: ภาวะของเหลวปริมาณมากขังในช่องเยื่อหุ้มหัวใจเป็นภาวะที่อันตรายและอาจเสียชีวิตได้ถ้าไม่ได้รับการรักษาที่ถูกต้อง แนวทางการรักษาภาวะนี้คือการระบายเอาของเหลวที่ขังอยู่ออก ร่วมกับการหาสาเหตุที่ทำให้เกิดภาวะนี้เพื่อจะได้ให้การรักษาที่เฉพาะต่อไป

วัตถุประสงค์: เพื่อประเมินผลการรักษาภาวะของเหลวปริมาณมากขังในช่องเยื่อหุ้มหัวใจ

วัสดุและวิธีการ: เป็นการศึกษาย้อนหลังจากประวัติของผู้ป่วย 26 ราย ที่มารักษาในระหว่างปี พ.ศ. 2550-2555 ด้วยวิธีการผ่าตัดระบายเอาของเหลวในช่องเยื่อหุ้มหัวใจออกทางใต้กระดูกหน้าอกหรือด้วยการผ่าตัดเอาเยื่อหุ้มหัวใจออกทางช่องทรวงอกด้านซ้าย

ผลการศึกษา: เป็นชาย 16 ราย และหญิง 10 ราย อายุระหว่าง 9-64 ปี เฉลี่ย 33.5 ± 16 ปี โรคที่เป็นสาเหตุของภาวะนี้ได้แก่ มะเร็งลุกลามมาที่เยื่อหุ้มหัวใจ 10 ราย วัณโรคเยื่อหุ้มหัวใจ 5 ราย โรคติดเชื้อจากแบคทีเรียของเยื่อหุ้มหัวใจ 5 ราย และการอักเสบที่ไม่เฉพาะเจาะจงของเยื่อหุ้มหัวใจ 6 ราย วิธีการวินิจฉัยสาเหตุดังกล่าวทำได้จากการตรวจทางพยาธิของเยื่อหุ้มหัวใจ 17 ราย การเพาะเชื้อแบคทีเรียของของเหลวในช่องเยื่อหุ้มหัวใจ 4 ราย และจากลักษณะทางคลินิก 5 ราย ผู้ป่วย 1 รายที่เป็นวัณโรคเยื่อหุ้มหัวใจเสียชีวิตในโรงพยาบาล ผู้ป่วย 3 รายที่เป็นมะเร็งและอีก 1 รายที่เป็นวัณโรคร่วมกับเอ็ดส์เสียชีวิตภายใน 1 ปี ผู้ป่วยรายอื่นที่เป็นวัณโรคหรือติดเชื้อแบคทีเรียหายเป็นปกติดี

สรุป: วิธีการผ่าตัดระบายเอาของเหลวในช่องเยื่อหุ้มหัวใจออกทางใต้กระดูกหน้าอกและการผ่าตัดเอาเยื่อหุ้มหัวใจออกทางช่องทรวงอกด้านซ้ายเป็นวิธีที่ได้ผลดีในการรักษาภาวะของเหลวปริมาณมากขังในช่องเยื่อหุ้มหัวใจ

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สามารถบรรเทาอาการได้ดีและช่วยในการวินิจฉัยโรคที่เป็นสาเหตุโดยเฉพาะจากวัณโรคเยื่อหุ้มหัวใจและมะเร็งที่ลุกลามมาที่เยื่อหุ้มหัวใจ

คำสำคัญ: ภาวะของเหลวในช่องเยื่อหุ้มหัวใจ, การผ่าตัดระบายเอาของเหลวในช่องเยื่อหุ้มหัวใจออกทางใต้กระดูกหน้าอก, การผ่าตัดเอาเยื่อหุ้มหัวใจออก

Abstract:

Introduction: Massive pericardial effusion is a potentially dangerous condition. The aims of management are symptomatic relief and getting an accurate etiologic diagnosis.

Objective: To assess the safety and efficacy of subxiphoid pericardial drainage and pericardiectomy through left anterior thoracotomy for management of massive pericardial effusion.

Material and Method: The medical records of 26 patients with massive pericardial effusion who underwent subxiphoid pericardial drainage or pericardiectomy during the 5 years between 2007 and 2012 in Yala Hospital were reviewed.

Results: There were 16 male and 10 female patients. Age ranged from 9–64 years (mean 33.52±16 years). The causes of pericardial effusions were metastatic cancer in 10 patients, tuberculous pericarditis in 5 patients, bacterial pericarditis or pyopericardium in 5 patients, and non-specific pericarditis in 6 patients. The diagnosis was made by pericardium biopsy in 17 patients, by culture in 4 patients, and clinically in 5 patients. Five patients died: one with tuberculous pericarditis who died in hospital, three with lung cancer who died within one year of diagnosis, and one with tuberculous pericarditis who died one year after discharge from acquired immune deficiency syndrome (AIDS). All other patients with tuberculous pericarditis and pyopericardium responded well with treatment.

Conclusion: Subxiphoid pericardial drainage and pericardiectomy through left anterior thoracotomy are safe and effective for management of massive pericardial effusion in both symptomatic relief and getting an accurate etiologic diagnosis, especially in patients with tuberculous pericarditis or malignant tumor invading the pericardium.

Keywords: pericardiectomy, pericardial effusion, subxiphoid pericardial drainage

Introduction

Pericardial effusion is a potentially dangerous condition, as accumulated fluid in the pericardial sac can ultimately lead to cardiac tamponade and

fatal shock. The causes of pericardial effusion can vary widely.¹ Some of these diseases have very poor prognosis, whereas others require specific therapy. An accurate etiologic diagnosis is therefore

particularly important. The management of massive pericardial effusion may include pericardiocentesis, pericardioscopy, subxiphoid pericardial drainage or pericardiectomy. The objective of this study was to assess the safety and efficacy of subxiphoid pericardial drainage and pericardiectomy through left anterior thoracotomy for management of massive pericardial effusion.

Material and Method

We reviewed the medical records of 26 patients with massive pericardial effusion who underwent subxiphoid pericardial drainage or pericardiectomy during the 5 years between 2007 and 2012 in Yala Hospital. Echocardiography was used for both diagnosis and determining the severity of the effusion. When the diastolic echo-free space between the left ventricular posterior wall and pericardium was more than 20 mm, it was classified as massive pericardium effusion. Subxiphoid pericardial drainage was performed as usual.² The pericardiectomy was performed through left anterior thoracotomy via fifth intercostal space. The objectives of surgical treatment are to relieve symptoms and to obtain a definitive diagnosis. Pericardiectomy was more effective than subxiphoid pericardial drainage regarding relieving the fluid and could be used for definite treatment but it is more invasive than subxiphoid pericardial drainage.³ Usually, pericardiectomy was selected if tuberculous pericarditis or pyopericardium were suspected as the cause of pericardial effusion. The pericardial fluid was collected for cell count, Gram stain, Acid fast bacilli, culture, and cytological analysis, and a piece of pericardium was submitted for pathological examination.

Continuous data are reported as means and ranges. Categorical data are given as percentages. This study was approved by the committee on ethical research of Yala Hospital.

Results

There were 16 male and 10 female patients. Age ranged from 9–64 years (mean 33.5 ± 16 years). Most of the patients presented with dyspnea arising from cardiac compression (Table 1). Symptomatic relief was obtained by subxiphoid pericardial drainage in 17 patients, and by pericardiectomy through left anterior thoracotomy in 9 patients.

Table 1 Clinical characteristics of the patients (n=26)

Characteristics	Value
Age (year; mean \pm S.D.)	33.5 \pm 16
Age (year; range)	9–64
Male (%)	61.5
Dyspnea on presentation (%)	84.6
Follow up time (month; mean \pm S.D.)	23.9 \pm 18.7
Follow up time (month; range)	4–65

The causes of pericardial effusions in this study were metastatic cancer in 10 patients, tuberculous pericarditis in 5 patients, bacterial pericarditis or pyopericardium in 5 patients, and non-specific pericarditis in 6 patients. The diagnosis was made by pericardium biopsy in 17 patients, by culture in 4 patients, and clinically in 5 patients (Table 2).

Table 2 Causes of massive pericardial effusion and methods of diagnosis in 26 patients

Cause of pericardial effusion	Number of patients	Method of diagnosis			Mortality	
		Histopathologic Examination	Pericardial fluid culture	Clinical feature	30 day	1 year
Metastatic cancer	10	-	-	-	-	-
Lung cancer	6	5	-	1	-	3
Breast cancer	3	-	-	3	-	-
Mediastinal cancer	1	1	-	-	-	-
Non-specific pericarditis	6	6	-	-	-	-
Tuberculous pericarditis	5	5	-	-	1	1
Pyopericardium	5	-	-	-	-	-
Hematogenous	4	-	4	-	-	-
Empyema thoracis	1	-	-	1	-	-

In the group of metastatic cancer, the primary site of cancer was lung in 6 patients, breast in 3 patients, and mediastinum in 1 patient. Histopathologic examination of the pericardium obtained from subxiphoid pericardial drainage resulted in a positive diagnosis in 5 patients with lung cancer and one patient with mediastinal cancer. For the remaining patients, the diagnosis was made on clinical grounds.

In the group of tuberculous pericarditis, the diagnosis was confirmed by histopathological examination in all patients. For four patients with bacterial pericarditis or pyopericardium, the organism identified in the cultures of pericardial fluid was *Staphylococcus aureus*. The causes of primary site infection of these patients were as follows: multiple skin abscess in one patient, pyomiositis in one patient, blunt chest trauma in one patient, and intravenous drug abuse in one patient. All patients with tuberculous pericarditis

were extrapulmonary tuberculosis and were treated with standard short course antituberculosis drugs regimen.

In the group of non-specific pericarditis, the diagnosis was confirmed by histopathological examination in all patients. Age ranged from 12 to 64 years, mean age was 31.8 years. The exact causes of massive pericardial effusion in these patients were unknown.

Follow up time ranged from 4 to 65 months, mean 23.9 ± 18.7 months. There were five deaths. One patient with tuberculous pericarditis died in hospital. Three patients with lung cancer died within one year from respiratory failure. And one patient with tuberculous pericarditis died one year after discharge from acquired immune deficiency syndrome. All other patients with tuberculous pericarditis and pyopericardium responded well with treatment.

Discussion

The causes of pericardial effusion reported in the literature vary and depended. Palatianos² reported his clinical experience with subxiphoid drainage of pericardial effusion in 41 patients, 31% of whom were due to malignancy and 20% were due to infections. Gibbs⁴ reported management of pericardial effusion in 46 patients, 44% of whom were malignancy and 26% were tuberculosis. On the contrary, Becit⁵ reported subxiphoid pericardial drainage in 368 patients, 43% of whom were due to uremic pericarditis and only 14% were due to malignancy. For the present series, a definitive diagnosis was made in 20 (76.9%) patients, the most common being metastatic cancer (38.5%), infections (38.5%), and 19% were due to tuberculosis.

Massive pericardial effusion can be treated with many different procedures: pericardiocentesis, pericardioscopy, subxiphoid pericardial drainage, and pericardiectomy. Each of these procedures can be effective, depending on many factors. The ideal procedure should be easy to perform with minimal morbidity and mortality, ensure complete drainage with symptomatic relief, and provide sufficient histologic, cytologic, and microbiologic specimens for diagnosis of the cause of the effusion. At present, two common procedures used to drain symptomatic pericardial effusion are percutaneous pericardiocentesis and open subxiphoid drainage. The potential advantages of pericardiocentesis are less invasiveness, visualization of both epicardium and pericardium, selection of the biopsy site, and the ability to take numerous samples safely. But a great deal of experience is needed for such procedure. The potential advantages of open

subxiphoid drainage are direct visualization and exploration of pericardium and pericardial cavity, the ability to probe the pericardial cavity to allow for complete drainage, biopsy of larger piece of pericardium, and placement of a larger tube for better drainage.

The efficacy of histopathologic examination of pericardium obtained from the subxiphoid drainage varied according to the different reports. Palatianos² showed positive pericardial biopsy in 6 of 14 patients (42.8%) with malignancy. Permanyer⁶ showed diagnostic yield of therapeutic biopsy of pericardial effusion at 54%. In the contrast, Corey⁷ reported the diagnostic yield of pericardium biopsy from subxiphoid drainage at only 23%. The diagnostic yield of pericardium biopsy in this series was 11 in 21 patients (52.4%). However, Nugue and colleagues⁸ had showed that pericardiocopy could increase the diagnostic sensitivity of surgical pericardial drainage and biopsy without specific risk.

In the present series, pericardiectomy through left anterior thoracotomy was performed as initial procedure in 9 patients. These patients were tuberculous in 3, Staph aureus pyopericardium in 2, complicated empyema thoracis in 1. One patient with metastatic lung cancer and two patients with non-specific pericarditis underwent pericardiectomy because tuberculous pericarditis was highly suspected as the cause of pericardial effusion in these patients. Pericardiectomy was performed as an initial procedure for pyopericardium or suspected tuberculous pericarditis with massive symptomatic pericardial effusion because many studies reported that it was an effective treatment for such patients.⁹⁻¹¹

Although subxiphoid drainage and pericardiectomy could give initial symptomatic relief, the final clinical result depended on the underlying disease. If the underlying disease was infection, the prognosis would be very promising. But if the underlying disease was malignancy, the prognosis would be poor, as three of ten malignant cases in this series died within one year.

Conclusion

Subxiphoid pericardial drainage and pericardiectomy through left anterior thoracotomy are safe and effective for initial symptomatic relief of massive pericardial effusion. It also helps to establish the diagnosis in the majority of patients with pericardial effusion, especially in patients with tuberculous pericarditis or malignant tumor invading the pericardium.

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