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Video-assisted thoracoscopic pericardial window for massive pericardial effusion: South Egypt experience

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ABSTRACT

Background: Symptomatic pericardial effusion (PE) is a common cardiothoracic presentation. It may reflect a wide variety of causes, ranging from infection to malignancy. The optimal management of pericardial effusion is still controversial. The two main interventional procedures agreed in the last decade as the two reasonable options for PE treatment are: surgical (transthoracic or subxiphoid) and video-assisted thoracoscopy (VATS) pericardial window. In this study we report our experience in VATS pericardial window in the management of massive pericardial effusion.

Methods: This prospective study was conducted between May 2013 to December 2015. Patients with massive pericardial effusion with or without tamponade, diagnosed by transthoracic echocardiography, and sometimes with chest computed tomography (CT) scan were included.

Results: Fifty-three patients with massive PE were included in the study, 33 males and 20 females, aged from 20 to 55 years. The causes of PE were malignancy 15 cases; uremia 5 cases; tuberculosis 8 cases; chronic non specific inflammation 13 cases and idiopathic in 12 cases. The main clinical presentation was dyspnea in the majority of cases (57%), followed by fever (15%), chest pain (8%), and (7.5%) were asymptomatic at time of presentation. 7 cases (13%) were unstable with signs of tamponade. The amount of fluid drained averaged 450 ± 95 ml (from 350 to 600 ml). The mean operative time was 120.45 ± 34.67 min. Lung injury, air leak, transient ventricular arrhythmias, and atelectasis were the main complications. The mean hospital stay was 9 days, and the mean chest tube duration was 4.3 days. There were no perioperative deaths. The Thirty-day mortality was 11%. Recurrence occurred in 3 patients (5.6%).

Conclusions: VATS pericardial window is an effective, safe and minimally-invasive technique for PE drainage and taking pericardial, pleural and lung biopsies.

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1. Introduction

Pericardial effusion (PE) usually occurs when the rate of fluid production is more than the rate of fluid formation [1]. It occurs due to benign or malignant causes. The commonest causes of massive pericardial effusions are malignancy, infection, collagen vascular disease and chest radiation [2,3].

The optimal management of pericardial effusion is still controversial. Many approaches have been evolved for drainage of fluid; such as pericardiocentesis, subxiphoid or transthoracic pericardial window and the relatively more recent video-assisted thoracoscopic (VATS) pericardial window [3,4].

During the last decades, important developments evolved the development of minimally invasive surgical techniques for different pulmonary and cardiothoracic diseases. One of these advancements is the VATS pericardial window [5,6].

The pericardial window allows taking a pericardial good biopsy and permits the drainage of the pericardial effusion into the left pleura. Also, we can manage lesions on the left lung or pleura, or drainage of associated pleural effusion [7].

In this study, we report our experience in VATS pericardial window in the management of massive pericardial effusion.

2. Patients and methods

This is a prospective study conducted between May 2013 to December 2015, at South Valley and Sohag University Hospitals. Fifty-three patients with massive pericardial effusion with or without tamponade, diagnosed by transthoracic echocardiography (TTE) (Fig. 1), and sometimes with additional chest computed tomography (CT) scan were included in the study (Fig. 2). Patients with postcardiac surgery, septated or localized pericardial effusions and patients with previous chest surgery on the left side were excluded from the study.

2.1. Procedure

The procedure was performed under general anesthesia with either double lumen (33 cases) or single lumen (20 cases) intubation, in the supine position with elevation of the chest (45°) in the majority of cases (82%), and lateral decubitus position in the remaining. The endoscopic camera and the other instruments were introduced through three incisions at the level of the fourth and sixth left intercostal spaces. The pleural space and lung were examined first, and any pleural effusion was drained and sent for cytological examination. After the phrenic nerve identification, the distended pericardium was grasped with endoscopic forceps and incised with endoscopic scissors 1–2 cm above and parallel to the phrenic nerve. Pericardial fluid was collected for cytological and microbiological analysis. The cut edges of the pericardial window were treated with electrocautery. The thoracoscopic suction device was used to evacuate the rest of effusion.

A large pericardial opening was created with good protection of the phrenic nerve. A pericardial biopsy was taken and sent for pathological examination (Fig. 3). Two chest tubes were inserted into the pleural cavity, through the two port sites; one of them through the window to drain the pericardium and the other in the left pleural cavity.

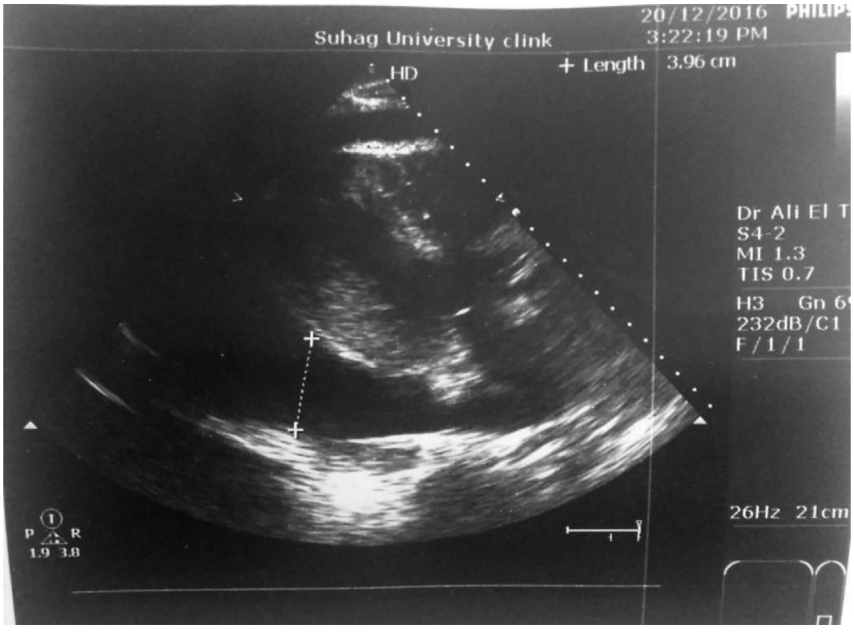

Fig. 1. Transthoracic echo of massive pericardial effusion.

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