

Case report

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Cardiac Tamponade Secondary to Metastasis from Adenocarcinoma of the Parotid Gland

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Published: 10 October 2003

Received: 10 August 2003

World Journal of Surgical Oncology 2003, 1:20

Accepted: 10 October 2003

This article is available from: <http://www.wjso.com/content/1/1/20>

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Abstract

Background: Metastatic involvement of pericardium producing cardiac tamponade is rare. When occurs it is mainly from the lung, breast and the neoplasms of the lymphoreticular system. Hematogenous spread of parotid adenocarcinoma to heart is extremely rare and only two cases have been reported in literature so far.

Case presentation: We report an unusual case of a patient with adenocarcinoma of the parotid gland, which presented with cardiac tamponade and was treated urgently with pericardial drainage and intrapericardial injection of cisplatin.

Conclusions: Our case demonstrates the possibility of metastatic pericardial involvement and cardiac tamponade in patients with parotid adenocarcinoma. The patient was successfully treated with pericardial drainage and intrapericardial injection of chemotherapeutic agent to control recurrent pericardial effusion.

Introduction

A variety of malignant diseases have been reported to metastasize to the pericardium. The ones most commonly reported include bronchial carcinoma, breast cancer, leukemia, Hodgkin's disease, non-Hodgkin's lymphoma, melanoma, gastrointestinal tumors and sarcomas.

Metastatic involvement of the pericardium may occur from either direct invasion by an adjacent primary tumor or by lymphatic or hematogenous spread. We report here a case of hematogenous metastasis to pericardium from adenocarcinoma of the parotid gland.

Case Report

A 61-year-old woman was admitted with a palpable right parotid mass and peripheral facial nerve palsy. She underwent a radical total parotidectomy with a subsequent diagnosis of high-grade adenocarcinoma of the parotid gland ($T_2N_{2B}M_0$ - Stage IV AJCC 1997 [1]). Postoperatively she was treated with adjuvant radiotherapy (parotid bed and neck nodes - 60 Gy over 30 fractions) and 3 cycles of chemotherapy (docetaxel, 100 mg/m² over 1 hour I.V. injection every 3 weeks) and was followed-up on a routine outpatient basis.

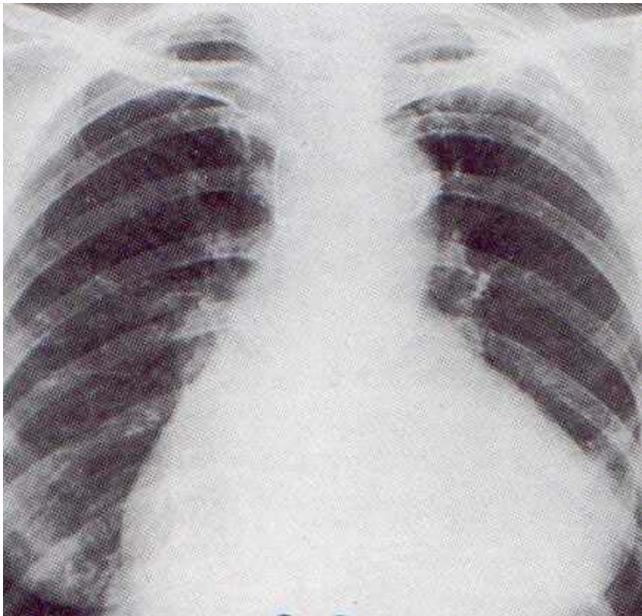


Figure 1
Chest roentgenogram showing increased cardiac shadow due to pericardial effusion.

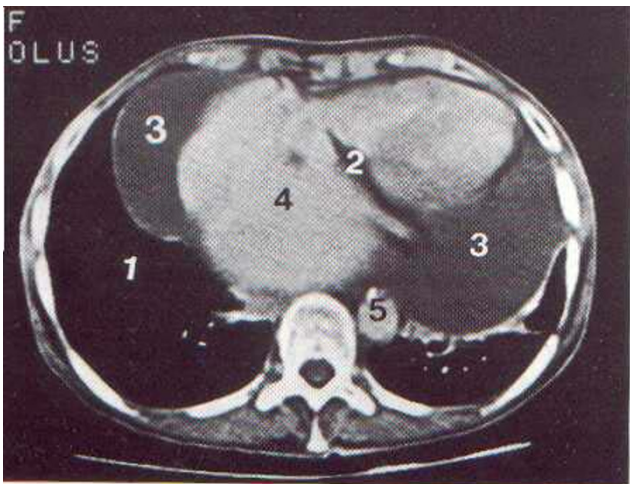


Figure 2
CT scan of the thorax showing pericardial effusion. 1. Lung, 2. Pericardial fat, 3. Pericardial effusion, 4. Heart, 5. Thoracic aorta.

Seven months later she was readmitted with a 3-day history of dyspnea, dry cough, chest pain, fatigue and lower extremity edema. She was afebrile with normal laboratory blood tests. Physical examination revealed facial plethora,

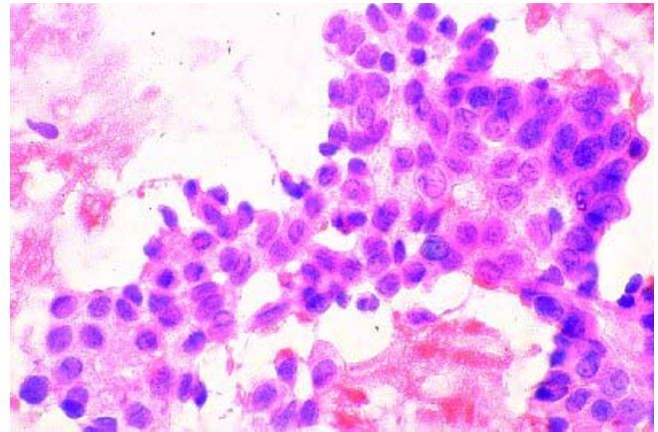


Figure 3
Aspiration cytology smear of centrifuged pericardial fluid showing malignant cells (Hematoxylin and Eosin \times 400).

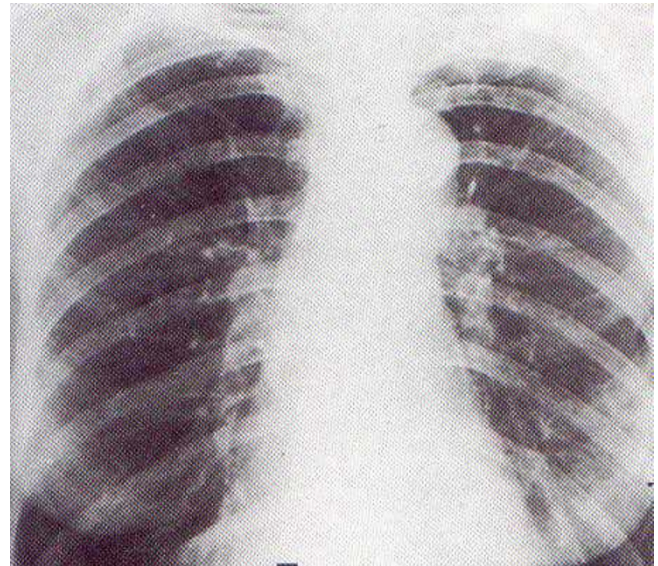


Figure 4
Normal chest roentgenogram 10 days after the intrapericardial chemotherapy.

orthopnea, tachypnea, jugular venous distention, peripheral cyanosis, distant heart sounds, decreased breath sounds at both lung bases and a blood pressure 90/55 mm Hg. Admission chest X-ray showed increased cardiothoracic ratio without pulmonary congestion (Figure 1). The electrocardiogram revealed sinus tachycardia, low QRS voltage and presence of total electrical alternans involving both atrial and ventricular complexes. An emer-

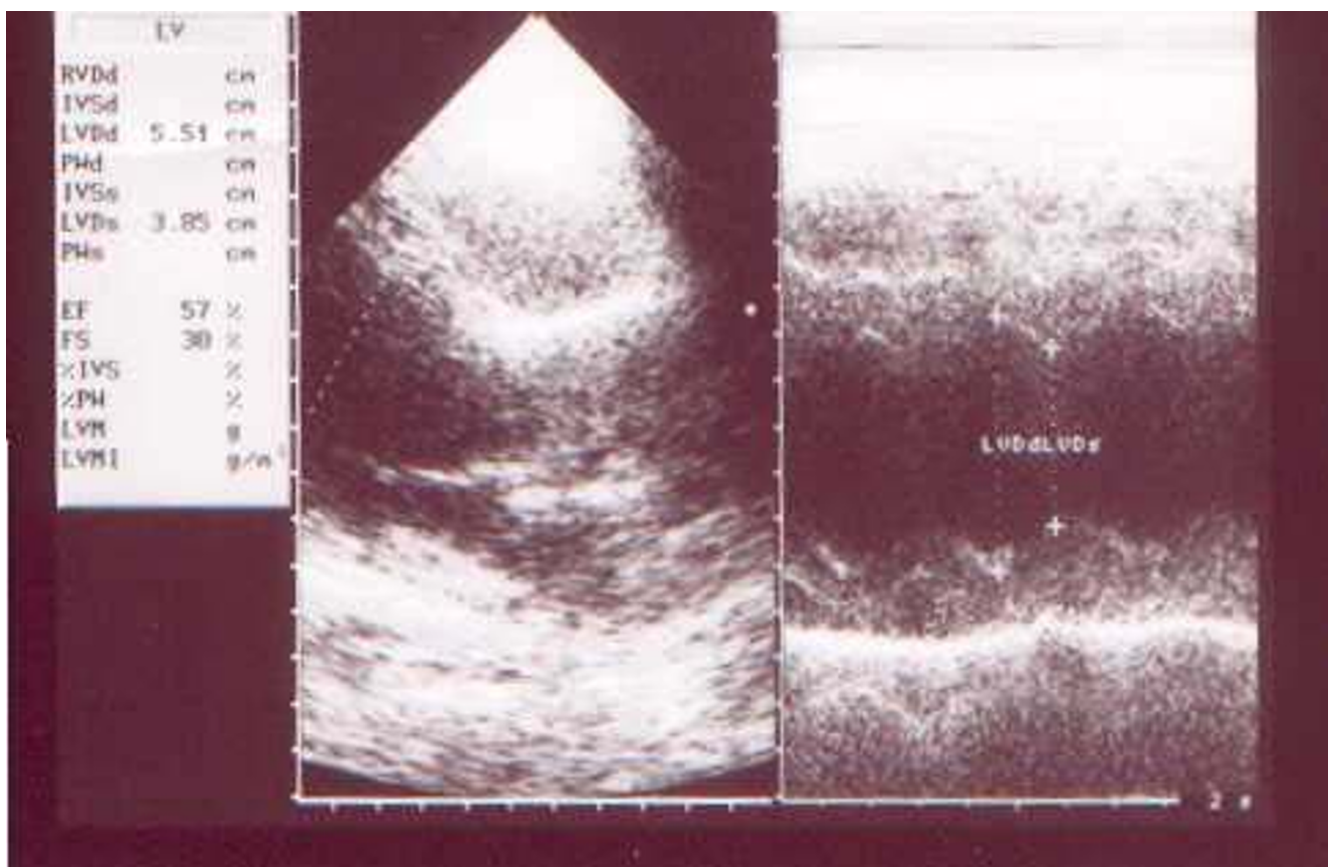


Figure 5
Post treatment 2-D and M-mode echocardiogram exhibiting no fluid accumulation and normal LV function.

gency echocardiogram disclosed massive pericardial effusion with right atrial and ventricular collapse. A thoracic CT scan demonstrated a large pericardial effusion without any evidence of intrathoracic lymphadenopathy, superior vena cava obstruction or metastases (Figure 2). Diagnostic right heart catheterization revealed a central venous pressure of 21 cm H₂O, a right ventricular pressure of 40/21 mm Hg and a pulmonary artery pressure of 22 mm Hg. A diagnosis of cardiac tamponade was established. Pericardiocentesis was performed and 750 ml of serosanguinous pericardial fluid were aspirated. Cytologic examination was positive for malignant cells having features of adenocarcinoma (Figure 3). The patient tolerated the procedure well without complications and experienced immediate clinical improvement. After five days, when daily accumulation of pericardial fluid decreased below 30 ml, we instilled 30 mg of cisplatin into the pericardial cavity and the catheter was removed. The patient underwent chest X-rays and three echocardiograms during the next 10 days which revealed no recurrent pericardial effusion (Figure 4 and 5). There were no complications related to the cispla-

tin installation. Her condition improved and she was discharged. She is alive and disease free at 5 months of follow-up.

Discussion

Malignant involvement of the heart or pericardium is not uncommon in patients with advanced cancer. The prevalence of combined metastasis to the pericardium and heart ranges from 0.1% to 21%. The most common malignancies involving the heart or pericardium include lung, breast, leukemia, Hodgkin's and non-Hodgkin's lymphoma, melanoma, gastrointestinal primaries and sarcomas [2].

The increase in pericardial fluid seen in malignant pericardial effusions is usually due to obstruction of lymphatic and venous drainage of the heart and this disturbs the level of intrapericardial pressure depending on the rate of fluid accumulation, pericardial compliance and intravascular volume. Mediastinal nodal involvement, which is frequently seen with lung and breast cancer, disturbs lym-

phatic drainage from the heart and pericardium through the cardiac nodes.

Our case demonstrates pericardial involvement and cardiac tamponade in a patient with parotid cancer. According to the international literature, two cases of parotid adenocarcinoma involving the pericardium have been described [3,4]. Becker et al reported a unique case of malignant pericardial effusion secondary to metastatic mucoepidermoid carcinoma in a patient previously treated for mucoepidermoid carcinoma of the parotid gland and subsequently found to have hypernephroma of the kidney. Surgical intervention and pericardial window formation was ultimately necessary in this case. In the second case Sulkes *et al.*, reported a metastatic pericardial involvement due to parotid adenocarcinoma but without cardiac tamponade and right heart congestive signs. In our case the patient presented with cardiac tamponade and was successfully treated with pericardiocentesis and intrapericardial administration of cisplatin.

The acute treatment of malignant pericardial effusion with cardiac tamponade involves the prompt removal of pericardial fluid by pericardiocentesis usually under echocardiographic guidance. The long-term management however remains controversial. Radiotherapy has been considered effective however it is not used any more. The creation of a pericardial window has been shown to be quite effective and has until recently been considered to be the treatment of choice for malignant pericardial effusion. The procedure requires left anterolateral thoracotomy or subxiphoid approach under general anesthesia and can be associated with significant morbidity and mortality in an already debilitated patient.

Intrapericardial administration of sclerozing agents such as tetracycline, 5 FU, bleomycin, cisplatin, and talc has been used for the palliative treatment of malignant pericardial effusions. Intrapericardial tetracycline has been used extensively with successful long-term control of effusions. Unfortunately, the use of tetracycline has been associated with several complications including arrhythmias, severe pain and fever [5]. We favor intrapericardial instillation of cisplatin, which has been associated with minimal side effects (bleomycin has the same results as that of cisplatin [6]) [7,8][9].

In our case there were no complications except for a mild fever (up to 37.5°C) for 48 hours after the instillation. The patient is alive, free of primary disease-related symptoms with no local or distant recurrence on the follow-up. There were no recurrences of pericardial effusion or compressive-constrictive physiology on repeated echocardiograms.

In summary, this rare case suggests that a malignant pericardial effusion should be considered in the patient with parotid adenocarcinoma who develops cardiac tamponade. Cytologic examination of aspirated cardiac pericardial fluid can confirm the diagnosis. Intrapericardial instillation of sclerosing agents should be considered, especially in patients in whom control of recurrent effusion would significantly add to quality of life or life expectancy.

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