

Pericardial effusion complicating breast cancer

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Summary

Thirty-five patients with metastatic breast cancer and pericardial effusions are described. They were treated with specific endocrine or chemotherapy. Twenty-two (63%) had presented in cardiac tamponade and were rapidly relieved by pericardiocentesis. Eighteen (82%) of these required no further local treatment, 2 obtained relief from a second aspiration and 2 needed additional treatment (intrapericardial bleomycin instillation and surgical pleuropericardial window). The median survival was 13.2 months. No patient relapsed again in the pericardium, suggesting that their prognosis was that of the underlying disease.

Cardiac tamponade should be considered in any breathless patient with malignancy. In breast cancer, pericardiocentesis is lifesaving and systemic treatment can usefully prolong life.

Introduction

Cardiac tamponade is a medical emergency. The patient is acutely breathless with a short history of progressive exertional dyspnoea and dry cough. It is essential that the signs of increased venous pressure and pulsus paradoxus are recognized in the emergency room so that rapid relief can be obtained by pericardiocentesis. Tumours now account for the majority of pericardial effusions seen by general physicians, but other causes include trauma, myocardial infarction, cardiac surgery, tuberculosis, uraemia, haemophilia and connective tissue diseases.

The occurrence of a malignant pericardial effusion is often considered to be a preterminal event, but this need not be so. Appropriate emergency treatment and systemic therapy can obtain prolonged remissions in many cases. We describe our experience of conservative treatment in 35 patients with breast cancer.

Methods

Thirty-eight patients with pericardial effusions were identified among 1802 patients with disseminated breast cancer seen at the Guy's Hospital Breast Unit between January 1969 and April 1985. Of these, 3 were discovered only at postmortem and will not be considered further. In the remaining 35 the diagnosis was confirmed by echocardiography, isotopic blood pool scan or computed tomography¹. Twenty-two (63%) patients presented in cardiac tamponade and were treated by pericardiocentesis using a teflon catheter with fluoroscopic or ECG monitoring². All patients were staged with chest X-ray, bone scan, biochemical screen and liver scan (when indicated by abnormal liver function). Appropriate endocrine or chemotherapy was started as soon as possible³. Effects of possible prognostic variables were investigated using survival curves⁴ compared by logrank testing⁵.

Results

The observation of 38 women with pericardial effusions among 1802 with disseminated breast cancer gives a minimum incidence of 2.1% for this complication. The 35 cases diagnosed antemortem are considered further. The median age at diagnosis of breast cancer was 48 years (range 25–65 years). Seventeen (55%) were premenopausal at diagnosis (menopausal status unknown in 3). Of the 23 in whom the stage of the primary tumour was known (TNM classification⁶), 10 (43.5%) were stage I, 5 (21.7%) were stage II, 7 (30.4%) were stage III and one (4.4%) was stage IV. The median interval between primary diagnosis and first recurrence (DFI) was 24 months (range 0–120 months). The median interval between first recurrence and presentation with pericardial effusion was 10.5 months (range 0–127 months). All patients had disseminated disease when the pericardial effusion developed, including pulmonary and pleural disease in 32 cases (91.4%), which may have masked the diagnosis of pericardial effusion. In 2 patients pericardial effusion was present at first relapse. Twenty-four (68.6%) had received previous endocrine treatments and 18 (51.4%) prior chemotherapy. Pericardial effusion was suspected in patients with progressive dyspnoea and a dry cough. Raised jugular venous pressure suggests the presence of an effusion, but hypotension and pulsus paradoxus are features of cardiac tamponade. Asymptomatic effusions occurred in 4 patients with physical signs and cardiomegaly on chest X-ray, confirmed by echocardiography or CT scan.

The 22 patients in tamponade underwent pericardiocentesis. Eighteen (82%) obtained symptomatic and haemodynamic relief from a single aspiration and required no further local treatment. Two were relieved by a further aspiration and 2 had additional procedures to control their symptoms, one having intrapericardial instillation of bleomycin and the other being treated by a pleuropericardial window. The women without tamponade were not subjected to invasive procedures. All but 3 patients (one who had been extensively pretreated and died one week after successful pericardiocentesis; one who had local radiotherapy only; one who had local treatment to her other disease sites) received systemic antitumour treatments³, 12 endocrine and 28 chemotherapy.

Survival after diagnosis of pericardial metastases was calculated by the life-table method⁴ (Figure 1). The median survival was 13.2 months. The difference in survival between those presenting with effusion but no tamponade (median survival 14.1 months) and those in tamponade (median 8.8 months) did not reach statistical significance. There was no significant survival difference between the pre- and post-menopausal groups, those with early or late stage

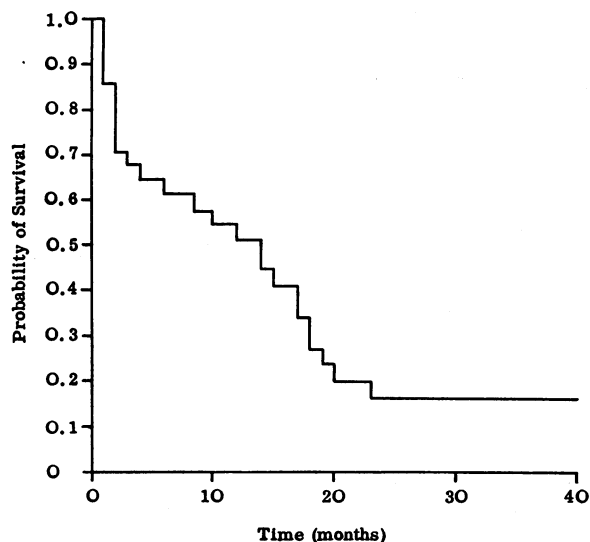


Figure 1. Survival (life-table method) of 35 breast cancer patients following the diagnosis of pericardial effusion. Four remained at risk after 40 weeks

primary tumours, or those pretreated by endocrine or chemotherapy. Survival was not related to DFI, interval between primary diagnosis and development of pericardial effusion, or age. Changes in systemic treatment policies, such as the reduced use of ablative endocrine therapies or the introduction of new drugs, were not shown to influence survival.

Discussion

Breast cancer is the commonest malignancy of women in the western world, accounting for 12 000 deaths annually in the UK. In our series pericardial effusions complicated 2.1% of advanced cases, but an autopsy series has revealed that pericardial involvement was a major cause of death in 4% of 166 breast cancer deaths⁷, and was present in a further 15% of cases. The number of such effusions occurring annually in the UK may thus be between 250 and 2000. Pericardial tumour not only causes effusions but may encase the heart and present as constrictive pericarditis, which is incompletely relieved by aspiration and requires pericardiectomy. Non-malignant causes of pericardial and myocardial disease should be considered in all cases⁸. Particularly important are delayed pericardial disease after radiotherapy⁹, cardiotoxic drugs such as doxorubicin¹⁰ and infections such as tuberculosis. Cytological confirmation of malignancy should be sought whenever pericardiocentesis is performed, although it will be negative in at least 15% of cases documented by biopsy⁸.

The patients described with pericardial effusions differ from the general population of women with metastatic cancer seen at the Guy's Breast Unit. A greater proportion were premenopausal at diagnosis (55% v. 33%) and had presented with stage III disease (30.4% v. 22%). No factors could be identified that would predict the development of pericardial effusions or the subsequent survival time. There have been few reports of treatment and survival of patients with pericardial effusions in breast cancer. Three patients treated by pericardiocentesis and systemic chemotherapy lived for 4, 5 and 8 months¹¹. Six patients subjected to 'aggressive' surgical treatment with pleuropericardial windows and systemic chemotherapy survived a median 17 months¹². These results compare favourably with survival after development of pericardial metastases in lung cancer, where

median survival is 21 weeks¹³. By contrast, breast carcinoma complicated by brain metastases carries a much worse prognosis, with a median survival of 12–16 weeks^{14,15}.

Control of malignant pericardial effusions has been effected by surgery¹², intrapericardial instillation of tetracycline¹⁶, chemotherapeutic agents¹⁷ or radioactive chromic phosphate¹⁸, and external beam radiotherapy. The results of our series suggest that simple aspiration is usually an adequate local treatment in breast cancer, and that the prognosis is that of the underlying disease. A high index of suspicion must be maintained if deaths from cardiac tamponade are to be prevented.

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