

Case report

Cardiac tamponade as a presenting symptom of bronchial carcinoma

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There are many causes of pericardial effusion. After excluding lymphoma and leukaemia, cardiac, metabolic, infective or immunological disorders take precedence to malignancies in the differential diagnosis. Clinical pericardial effusions are uncommon in patients with carcinoma of the bronchus, and cardiac tamponade as a presenting symptom is very rare. We report three such patients and relate them to the spectrum of bronchial carcinoma.

CASE HISTORIES

Patient 1: A 38-year-old female smoker presented at 28 weeks' gestation, with a two-week history of shortness of breath. On admission the jugular venous pressure was elevated and enlarged cervical lymph nodes were noted. Chest X-ray showed a lesion at the right hilum. Shortly afterwards, the patient spontaneously delivered a live female infant and then collapsed post-partum. Pulsus paradoxus and a systolic blood pressure of 90mmHg were noted. Echocardiography confirmed a large pericardial effusion with tamponade. Symptoms were relieved by aspiration of one litre of bloodstained fluid which contained dedifferentiated cells. Lymph node biopsy and bronchial brushings showed malignant cells in keeping with a large cell carcinoma. Despite one further pericardial aspiration and 2000cgys radiotherapy over 11 days, she died 28 days after presentation.

Patient 2: This 44-year-old male smoker was admitted with a seven-week history of progressive dyspnoea, cough and mild weight loss. Admission blood pressure was 90/60mmHg with pulsus paradoxus and a positive Kussmaul's sign (a paradoxical rise in jugular venous pressure on inspiration). Enlarged, firm lymph nodes were present in the left supraclavicular fossa. Echocardiography demonstrated a pericardial effusion with tamponade. Computerised axial tomography showed a right lower lobe bronchial neoplasm with hilar node involvement. Aspiration of 700ml of bloodstained fluid, followed in 48 hours by a further 1800ml, temporarily relieved symptoms. Pericardial aspirates, sputum samples and lymph nodes contained adenocarcinoma cells. Despite local

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instillation of 500 mg of tetracycline and 3500 cgy radiotherapy over 19 days, he died 62 days after admission.

Patient 3: This 66-year-old male smoker presented with a three-month history of increasing dyspnoea. On examination blood pressure was 140/100 mmHg and the venous pressure was elevated with marked pulsus paradoxus. Echocardiography demonstrated a pericardial effusion with tamponade. Computerised axial tomography showed a mass in the left lower lobe; 750 ml of bloodstained pericardial fluid was aspirated. This and sputum samples contained adenocarcinoma cells. Despite instillation of 500 mg tetracycline and 4000 cgy radiotherapy over 30 days, the patient died 77 days after presentation.

DISCUSSION

In general, squamous cell tumours occur in 40–50% of reported series, small cell tumours in 22% and adenocarcinoma in 20%.¹ The male to female ratio is about 5:1. The relative incidence of adenocarcinoma may be increasing and accounts for 45% of bronchial tumours in women.² The incidence of squamous adenocarcinoma and small cell infiltrates of the pericardium is similar (10.5%, 11.7% and 9.5% respectively),³ and where a pericardial effusion is present the incidence of adenocarcinoma is 66%, with a male to female ratio of less than 2:1.^{4, 5}

Metastatic causes of pericardial effusion are not common.^{6, 7, 8} The amount of fluid is variable and tamponade rare. A review of recent literature reveals a total of 49 patients with tamponade secondary to malignancy. Of these, 30 had a bronchial neoplasm, with a male to female ratio of 1.6:1.^{6, 9, 10, 11}

The overall mean age of patients presenting with bronchial carcinoma is about 60 years.^{9, 12} For squamous cell tumours, the mean age at presentation is 60 years with 12% of patients under the age of 50 years, for small cell tumours 55 years, with 30% under 50 years, and for adenocarcinoma 61 years.^{13, 14, 15} In a large series of patients with adenocarcinoma and tamponade the mean age was 50.4 years with 52% under 54 years of age.⁴ Thus patients with adenocarcinoma and tamponade are more likely to be young and female when compared with other patients with bronchogenic carcinoma.

The reason for this relatively young age at presentation is unclear. Increased local invasiveness with epicardial metastases may be a relevant factor.^{16, 17} In patients with non-pulmonary carcinoma causing tamponade, the average age at presentation is 51 years which makes direct invasiveness unlikely to be the cause.

Tumour doubling time may be important. Adenocarcinoma has a slower doubling time (six months) than squamous carcinoma (three months) or small cell tumours (one month).⁷ We postulate that the slow growth of adenocarcinoma cells in relatively young patients may lead to lymphatic obstruction and effusions, rather than the direct lymph node pressure effect of bronchial obstruction seen with more aggressive neoplasms.

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