Respiratory failure with diffuse patchy lung infiltrates: an unusual presentation of squamous cell carcinoma

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Abstract

The case history is presented of a patient with squamous cell carcinoma of the lung with diffuse bilateral pulmonary shadowing mimicking bronchioloalveolar cell carcinoma which led to type I respiratory failure.

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Case history

A 45 year old white man with an unremarkable medical history was admitted with progressive dyspnoea. He had been a heavy cigarette smoker (25 pack-years) but had stopped two years previously. During the three months before admission he developed anorexia, progressive dyspnoea and a dry cough, and lost 8 kg in weight. Two days before admission he became breathless at rest. A chest radiograph showed diffuse patchy infiltrates and he was admitted for investigation.

On examination he was thin and cyanosed, with moderate respiratory distress and a breathing frequency of 28 breaths per minute. Blood pressure was 100/70 mm Hg, heart rate 108/min, temperature 37.2°C. No lymphadenopathy was found. Dry crackles were audible over both lung fields. The haematocrit was 49.3%, and the white cell count was $12.3 \times 10^9/l$ with 87% neutrophils. The erythrocyte sedimentation rate was 29 mm/hour. Breathing room air, blood gas tensions were P_{aO_2} 6.2 kPa, P_{aCO_2} 4.5 kPa, and pH 7.45.

A chest radiograph showed diffuse patchy opacities involving both lung fields, paratracheal lymphadenopathy, a moderate increase in heart diameter, and no evidence of pleural disease (fig 1).

Microbiological examination of sputum and blood were negative. Fibreoptic bronchoscopy revealed diffuse non-specific inflammatory changes of the mucosa which was most pronounced in the lower lobes. No endobronchial tumour was seen and no malignant cells were found in the bronchoalveolar lavage fluid, cultures of which failed to grow aerobic bacteria, viruses, fungi, or mycobacteria. Biopsy samples

of the bronchial mucosa were not obtained because of respiratory distress.

Although an infectious aetiology could not be proven, the patient was initially treated with intravenous fluids, oxygen via nasal prongs, and ceftazidime, isoniazid, rifampicin, and ethambutol intravenously. On the second day after admission dyspnoea and hypoxaemia worsened, necessitating endotracheal intubation and mechanical ventilation. Haemodynamic monitoring revealed a pulmonary artery wedge pressure of 18 mmHg, cardiac output of 4.7 l/min, and a systemic vascular resistance of $750 \text{ dyn s cm}^{-5}$. Despite an F_{IO_2} of 100% and positive end expiratory pressure, severe hypoxaemia persisted and the patient died the next day.

At post mortem examination both lungs showed numerous white nodules, evenly distributed over all lobes. No haematogenous metastases were noted on haematoxylin and eosin staining. An orceine stain was not done. The heart was normal.

Histological examination of the lungs revealed extensive alveolar infiltration by a squamous cell carcinoma (fig 2). There were no histological changes indicating pneumonia or pulmonary infarction. Furthermore, hilar and paratracheal lymph nodes were invaded by the same tumour. Pulmonary oedema and hyaline membranes suggestive of adult respiratory distress syndrome were also present.

Discussion

Diffuse neoplastic pulmonary disease with a predominantly acinar pattern has been demonstrated in haematogenous metastases, lymphoma, and bronchioloalveolar cell carcinoma of the lung. Such multifocal con-

Figure 1 Chest radiograph obtained on admission revealing a diffuse patchy infiltrate throughout both lung fields, most noticeable in the right lower lobe.

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Figure 2 Post mortem lung tissue with squamous cell carcinoma infiltrating and obliterating the alveolar spaces. Stain: haematoxylin and eosin, original magnification 6×19 reduced to 69% in origination.

solidation is rarely found in squamous cell carcinoma of the lung,¹ a tumour which accounts for 38–62% of primary lung tumours.² Radiologically squamous cell carcinoma of the lung presents as atelectasis (37%), a hilar or perihilar mass (35%), or by obstructive pneumonitis or consolidation (25%).³ Analysis of

the radiographic appearance of 263 cases of squamous cell carcinoma of the lung⁴ revealed only two cases of homogeneous opacification limited to one lobe or segment without decrease in volume. However, no clinical or pathological details of these two cases were given. Hind reported a case of lobar infiltration by a squamous cell carcinoma which closely resembled a bronchioloalveolar cell carcinoma.⁵

Bronchioloalveolar cell carcinoma has been described as “another great imitator”, which in approximately two thirds of cases presents as a solitary peripheral lesion with sharp or fuzzy margins.⁶ It may also present as a multinodular lesion or a diffuse infiltrate, however, in which case the prognosis is considerably worse. Hilar and mediastinal adenopathy has been reported to occur in bronchioloalveolar cell carcinoma in 15–35% of cases.⁷

Although we are aware of the rarity of this presentation, we believe that squamous cell carcinoma of the lung should be added to the list of numerous causes of diffuse patchy infiltrates of the lung presenting with acute respiratory failure.

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