UNUSUAL PRESENTATION OF GIANT CELL CARCINOMA OF THE LUNG

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Introduction

Giant cell carcinoma of the lung (GCCL) is a rare histological type of lung cancer accounting for just 0.3% of all lung malignancies [1]. Further more, in rare instances a true metaplasia occurs in GCCL with different types of cell differentiation [2]. These tumors are usually present in older male smokers as a large peripheral lesion [3,4]. A few reports of GCCL are available in the literature and not much is known about their biological behaviour. GCCL is classified as a variant of a large cell carcinoma (LCC) and its association with spindle cell type is so frequent that these are best regarded as one type of lung cancer [4-6]. *Pseudomonas aeruginosa* has been reported as a single most common cause of nosocomial lower respiratory tract infection [7]. Its association is known with elderly and debilitated patients. More than half the hospitalised patients with malignancies carry colonies of pseudomonas in their oropharynx. Bacteremic pneumonias usually complicate and mask the underlying malignancy.

We report a case of GCCL with a rare bony metaplastic differentiation. The patient initially presented as a case of obstructive pseudomonas pneumonia but later on, he was found to have underlying malignancy.

Case Report

A 52-year-old smoker with no significant past history of illness presented with cough, low grade fever, difficulty in breathing and chest pain of 10 days duration, which did not respond to the prescribed antibiotics. Chest radiograph prior to reporting to this hospital revealed, area of consolidation over the right lower lobe (RLL) (Fig 1). The patient subsequently developed hydropneumothorax. Investigations revealed Hb 10.6 g/dl, TLC 10,700 per cmm with 78% neutrophils on differential count. *P aeruginosa* was isolated on sputum culture, which was sensitive to gentamicin, carbenicillin and piperacillin and resistant to ciprofloxacin and cefotaxime. Though the patient was on Inj gentamicin he showed no improvement. Pleurocentesis from the right chest cavity showed haemorrhagic fluid. With the above clinical notes the patient was further investigated at our center. Fibro-optic bronchoscopy

showed friable and haemorrhagic mucosa over RLL bronchus. Computed tomography (CT) scan of the thorax showed an irregular tooth like structure obstructing the lumen of RLL bronchus besides evidence of consolidation of RLL. On questioning, the patient gave history of tooth extraction one month prior to the onset of the present illness. However, he was asymptomatic for these 4 weeks.

In spite of the active treatment, the patient continued to deteriorate with increasing dyspnoea and there was no signs of resolution of the lesion. The pleural fluid aspiration at this time revealed numerous loosely dispersed large pleomorphic tumour cells containing variable amount of cytoplasm and frequently exhibiting horse shoe configuration of the nuclei. The nuclei were hyperchromatic with coarse chromatin and prominent nucleoli. At places a few multinucleated giant cells and neutrophils were seen (Fig 2). *P aeruginosa* was also cultured from the pleural fluid with the similar antibiotic susceptibility pattern. The TLC gradually increased to 15,500 per cmm with 90% neutrophils and the patient subsequently succumbed to the illness.

Fig 1 : Chest radiograph (PA view) showing evidence of consolidation in the middle and lower zone, right lung

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Fig. 2 : Cytology of aspirate from right pleural cavity, showing loosely cohesive pleomorphic giant cells with horse shoe configuration (x 40)

On autopsy, one liter of haemorrhagic serosanguinous fluid was found in the right pleural cavity. The right lung showed massive area of consolidation in the lower lobe with foci of necrosis. On serial cut sections of the lung, there was a solitary irregular tumour mass in the right lower lobe measuring 2.5 x 5 cm with areas of haemorrhage and necrosis. A small bony structure was seen embedded within the tumour of the size of a tooth. Left pleural and abdominal cavity contained 150 ml and 1 litre of serous fluid respectively. No metastatic deposits of tumour were seen on gross examination of the organs. *P aeruginosa* was isolated from all the body fluids on culture.

Histopathological examination of the microsections from areas of consolidation of right lung showed evidence of pneumonia. On Gram's staining, it revealed gram negative bacilli and no fungal elements were seen. Sections from the tumour showed loosely cohesive large cells containing osteoclast like giant cells with large hyperchromatic nuclei, coarse chromatin and prominent nucleoli (Fig 3). A few nuclei were bizarre, located peripherally in the eosinophilic cytoplasm showing mitotic figures. No glandular or squamous differentiation was present and histochemical demonstration for keratin and mucin was negative. A few inflammatory cells, were seen penetrating the sheets of tumour cells. The diagnosis of GCCL was made. Metaplastic bony differentiation was present in the tumour, which was being confused with a tooth piece on CT scan and chest radiograph.

Discussion

WHO classification for lung cancers defined GCCL, for the first time in 1981 as variant of LCC [5]. The diagnosis of LCC is mainly based on the negative findings such as absence of squamous or glandular differentiation and none of the distinct histopathological features suggestive of small cell lung carcinoma [2]. Before 1981, based on the morphology many cases of poorly differentiated squamous, adeno or adenosquamous carcinomas with presence of giant cells were being labelled as GCCL [6]. The misinterpretation of the lesion with granulomatous pathology

Fig. 3 : Section from the tumour showing multinucleated loosely cohesive giant cells with variable amount of cytoplasm (x 40)

particularly as it happened in this case, may pose a diagnostic dilemma. In contrast to the tumour giant cells, the granulomatous giant cells have small hypochromatic nuclei with faint or absent nucleoli.

WHO histological criteria defining GCCL are somewhat vague on the number of giant cells present. The subjective interpretation of the findings such as prominent nucleoli in a large cell and requirement of multinucleation, has no common consensus. The minimum percentage of giant cells in the tumour per high power field, has not been uniformly accepted by various authors. In a review series of pleomorphic (spindle/giant cell) carcinoma of the lung, the minimum percentage of giant cells was arbitrarily taken as 10% [4]. However in our case, we could see as much as 30% giant cell components in a few fields.

GCCL has been described as an aggressive tumour with short clinical course, greater propensity for dissemination of the tumour as compared to other cancers and younger age of the patients, at the time of death [3,4,8]. The clinical presentations of GCCL is usually cough, thoracic pain, haemoptysis, weight loss or weakness and less commonly; fever, melena or pneumonia [3,4,6,8]. The clinical and pathological features of this tumour warranted consideration of GCCL as a distinct clinicopathological entity.

Bony metaplasia in the tumour, which was suspected as a tooth in this case causing obstructive pneumonia, was an interesting clinical presentation. Isolation of *P aeruginosa* in ante and postmortem body fluids, kept the clinician concentrated on *pseudomonas* pneumonia neglecting the underlying GCCL leading to fatality.

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