

**Case Report:**

## **Cytomorphological study of Giant cell carcinoma of the lung: Report of 2 cases**

**Dr. Ritesh Choubey, Dr. Sunil Kumar Y., Dr. Jayaprakash Shetty K., Dr. Michelle Mathias,  
Dr. Aashish Sharma K.**

K.S. Hegde Medical Academy

Corresponding author: Dr. Ritesh Choubey

---

**Abstract:**

Giant cell carcinoma of the lung is a rare lung malignancy categorised under the sub-heading of pleomorphic, spindle cell, and giant cell carcinoma. In this case report, we describe the cytological features of two cases of giant cell carcinomas diagnosed in Computed Tomography guided Needle Aspiration, further confirmed by histopathology and immunohistochemistry.

**Keywords:** Carcinoma, Giant Cell; Malignant Epithelial Neoplasms

---

**Introduction:**

Giant cell carcinoma of the lung is classified by the World Health Organisation under the subheading of pleomorphic, spindle cell, and giant cell carcinoma. It includes those poorly differentiated tumours in which almost entire tumour tissue is made of tumour giant cells (either mononuclear or multinucleated)<sup>1</sup>. The WHO estimates this entire group to account for about 2-3% of all cancer cases, while the subclass of giant cell carcinoma is considered very rare. A literature search reveals a paucity of cases of giant cell carcinoma world over with limited Indian data. Here we report two cases of giant cell carcinoma of lung diagnosed cytologically and later confirmed by histopathology and immunohistochemistry.

**Case report:**

Case 1:

A 56-year-old male, a chronic smoker came with complaints of breathlessness and cough with expectoration for three months. Systemic examination revealed reduced vocal fremitus over the right upper lobe, with a dull note on percussion suggestive of consolidation. Contrast-enhanced CT done revealed a heterogeneously enhancing mass lesion in the right perihilar and apical regions with narrowing of bronchial and pulmonary arteries with lymph nodal enlargement suggestive of a primary malignancy.

CT guided fine needle aspiration and trucut biopsy was done. FNAC slides revealed pleomorphic bizarre tumour cells comprising predominantly of mononuclear and multinucleated giant cells showing high nucleus: cytoplasmic ratio, vesicular nucleus, nuclei are lobulated and irregular with prominent nucleolus (Figure 1). Few mononuclear tumour cells were also seen (Figure 2). A cytological diagnosis of giant cell carcinoma was given. Histopathology confirmed the diagnosis. Medical oncology reference was sought and palliative chemotherapy, but the patient was not willing for the same and was discharged against medical advice

Case 2:

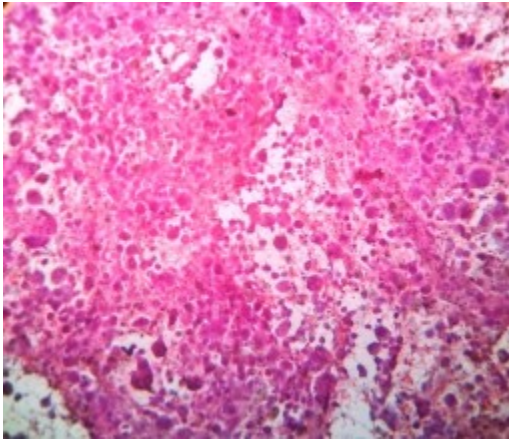
A 75-year-old male, a smoker for 25 years presented with breathlessness from 6 years which aggravated a week back, and cough with copious yellow coloured expectoration from a week. General examination was unremarkable. Systemic examination was normal but for rhonchi on auscultation. Contrast-enhanced CT revealed a solitary pulmonary nodule of the left lung. CT guided FNAC and trucut biopsy was done. Fine needle aspiration cytology slides were highly cellular and showed pleomorphic tumour cells in loosely cohesive clusters and singles. The tumour cells were composed of mononuclear and multinucleated giant cells with multiple macronucleoli, coarse chromatin and atypical mitosis. The background showed mixed inflammatory cells (Figure 3). Histopathology confirmed the diagnosis of giant cell carcinoma. The patient was advised radiation/ chemotherapy for which he wanted to visit a regional cancer hospital and was lost for follow up.

**Discussion:**

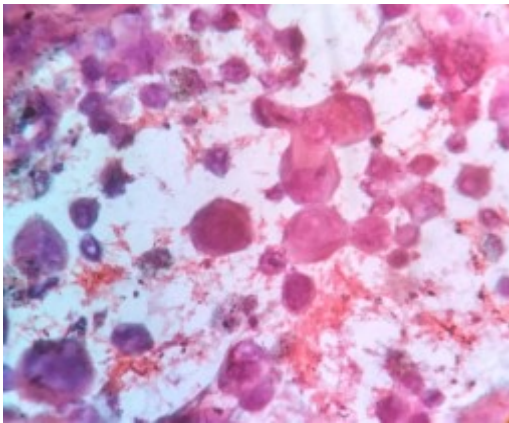
Giant cell carcinomas are rare tumours. Nash and Stout first described this tumour in 1958<sup>2,3</sup>. It accounts for less than 1 %, seen usually in smokers, other etiological factors associated includes asbestos expose, chemical and immunosuppression with a clinical presentation similar to that of adenocarcinomas with complaints of shortness of breath as seen in both of our cases. Other clinical symptoms include hoarseness of voice, haemoptysis etc. Imaging typically shows a peripheral lung mass with a possible infiltration of pleura. Both our cases were of peripheral location in the apical region of the upper lung lobe. These unusual tumours are known to cause distant metastases, which could not be evaluated for in our cases due to their unwillingness for further investigations and premature discharge. Cytological features show the presence of mononuclear and multinucleate giant cells, some cells mimicking syncytiotrophoblast cells and an almost exclusive giant cell tumour population with necrosis and tingible body macrophages in a background of inflammation. Histopathology examination shows giant cell component comprising at least 10% of the tumour, these cells show abundant often eosinophilic sometimes granular cytoplasm and contain eosinophilic globules. The nuclei are large irregular and multilobated or multiple, with coarse or vesicular chromatin and prominent nuclei. Though the diagnosis is based on tumour morphology immunohistochemistry may aid in diagnosis. Tumour cell show positivity for cytokeratin and vimentin. The prognosis is poor even when detected early. Although complete tumour resection and chemotherapy are adopted a mode of treatment. Tumour seems to have a poor response to any currently modality including platinum based chemotherapy and radiotherapy<sup>4</sup>.

**Conclusion:**

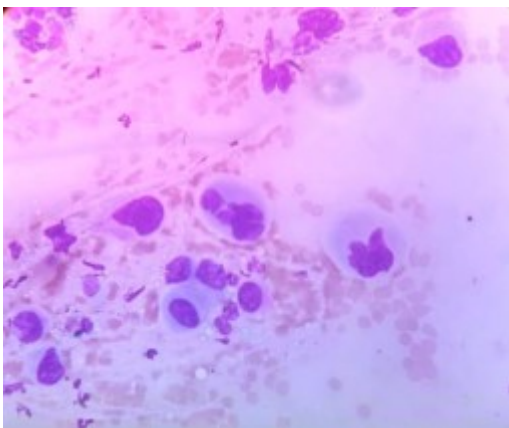
Giant cell carcinomas are unusual tumours, with limited Indian literature data. A diagnosis of these confers bad prognosis, hence should be carefully evaluated under the microscope. These are aggressive tumours with bad prognosis.



**Figure 1:** Aspirate showing a highly cellular tumour comprised of an exclusive population of mononuclear and multinucleated giant cells (Papanicolaou stain, x100).



**Figure 2:** High power view of the same focus showing mononuclear and multinucleated giant cells with bizarre hyperchromatic nuclei, irregular nuclear margin, prominent nucleoli, and dense cytoplasm (Papanicolaou stain, x400)



**Figure 3:** Aspirate of the tumour showing pleomorphic multinucleated and mononuclear giant cells (Papanicolaou stain, x400)

**References:**

1. Wei S, Wang D, Li X, Liu J, Zhang Z, Chen J. Molecular features of giant-cell carcinoma of the lung: a case report and literature review. *Onco Targets Ther.* 2018;Volume 11:751–6.
2. Nash AD, Stout AP. Giant Cell Carcinoma of the Lung: Report of 5 Cases. *Cancer.* 1958;11:369–76.
3. Hellstrom RH, Fisher ER. Giant cell carcinoma of the lung. *Cancer.* 1963;16:1080–8.
4. Hiroshima K, Dosaka-Akita H, Usuda Katsuo O, Kusunoki Y, Kodama T, Saito Y, et al. Cytological Characteristics of Pulmonary Pleomorphic and Giant Cell Carcinomas. *Acta Cytol.* 2011;55(2):173–9.