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Case Report

Pathology Section

Granular Cell Tumour of the Endobronchus: A Case Report

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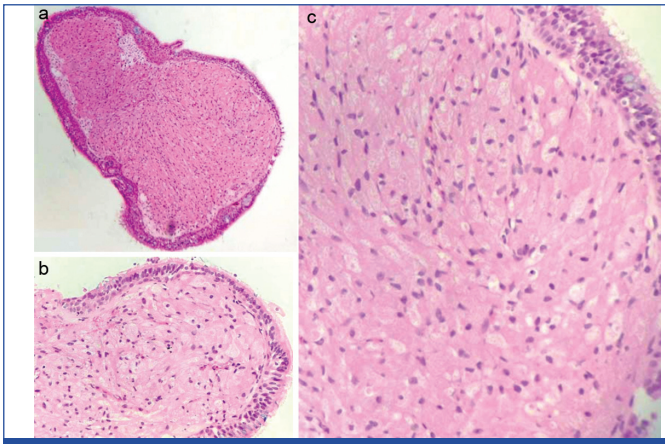
ABSTRACT

Granular cell tumour is a rare tumour of mesenchymal origin arising from Schwann cells. It is a benign tumour and most common sites include skin, oral cavity and gastrointestinal tract. These tumours are found incidentally. Only 1 to 2% tumours are malignant. Malignant criteria is based on histopathological features. A 48-year-old male came with complaints of cough, loss of weight and appetite for past three months. Past history of tuberculosis, active smoker and an alcoholic for past 10 years. CT scan showed areas of fibrosis and cavitatory changes in bilateral upper lobes and right middle lobe. Emphysematous changes in left upper lobe, lingual segment and right lower lobe. Bronchoscopy showed a nodule in endobronchus measuring 1×0.8 cm. Sputum culture and bronchial wash were negative. Smear for acid fast bacilli and fungal organisms were negative. Histopathology of the nodule showed features of granular cell tumour. This case highlights the unique location of the tumour as it is most commonly seen in skin and gastrointestinal system. Respiratory tract granular cell tumour is very rare. Treatment includes complete excision of the tumour and close follow-up is essential.

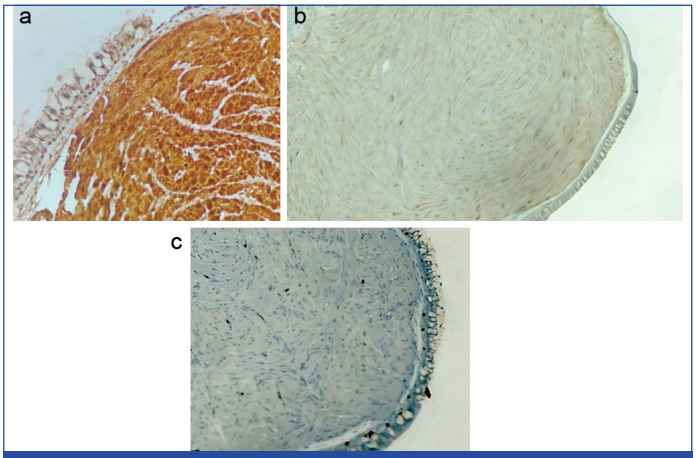
Keywords: Endobronchus, s100, Schwann cells, Smoking

CASE REPORT

A 48-year-old male came with complaints of cough with white mucoid sputum, loss of weight and appetite for three months and new onset of low-grade fever for one day. Past history of Tuberculosis 10 years back and was treated for same with antitubercular drugs. Patient is an active smoker and known alcoholic for past 10 years and not on an any medication. With the initial history, CT Thorax was done which showed areas of fibrosis and cavitatory changes in bilateral upper lobes and right middle lobe. Paraseptal emphysematous changes in left upper lobe, lingual segment and right lower lobe. PET scan was not done as there was no mass detected in CT scan. Based on history and radiology clinical differential include reactivation of tuberculosis, pneumonia was suspected. Bronchoscopy showed mucopurulent secretions in right upper lobe and granulation tissue in right lower lobe and a nodule in endobronchus measuring in size 1×0.8 cm. The nodule was well circumscribed and confined to bronchial lumen. Bronchial wash smear was negative for acid fast bacilli and fungal organisms. Culture sputum for fungus is negative. Culture bronchial wash for mycobacterium is negative. The provisional diagnosis was pneumonia, reactivation of tuberculosis and differential diagnosis was bronchial or lung malignancy. Excisional biopsy of the endobronchial nodule was done. The biopsy showed fragments of tissue lined by respiratory epithelium with subepithelium showing sheets and nests of cells which are large, round to polygonal with abundant eosinophilic granular cytoplasm, centrally located bland nuclei and indistinct cell borders [Table/Fig-1a-c]. Based on histology differential diagnosis include histiocytosis, alveolar soft part sarcoma. On basis of submucosal location and granular cytoplasm of cells, immunohistochemistry for s100, inhibin and Ki-67 labelling index was done. The round to polygonal cells were strongly positive for S100, focally positive for inhibin and Ki-67 labelling index was less than 1% [Table/Fig-2a-c]. Strong positivity to S100 suggests the origin is of Schwann cells and rules out carcinoid tumour. The final diagnosis based on histology and immunohistochemistry-granular cell tumour of endobronchus. It was an incidental finding and patient was stable and is being closely monitored and advised follow-up every year.



[Table/Fig-1]: a-c) Endobronchial biopsy pseudostratified ciliated columnar epithelium with subepithelium shows nests and cords of cells (a100x). Cells are round to polygonal with abundant eosinophilic cytoplasm and coarse granules with large bland nuclei (b,c 400x).



[Table/Fig-2]: a to c) Strong positivity for s100 (a400x). Focally positive for inhibin (b400x). Ki-67 labelling index less than 1% (c400x).

DISCUSSION

Granular cell tumour is also known as Abrikossoff tumour [1] as it was discovered by Russian pathologist Abrikossoff. It is a rare tumour of mesenchymal origin arising from Schwann cells [1]. The

most common site includes the skin, oral cavity and gastrointestinal system [2]. They are mostly benign tumours and incidence is 2% to 6% [3]. The malignant potential of the tumour is very low [4]. The mean age group is around the 6th decade of life, with a higher prevalence in males than females. The pathogenesis of granular cell tumour is loss of function mutation V-ATPase accesory genes ATP6AP1 and ATP6AP2 [5]. The intracytoplasmic granules occurs due to inactivation of these genes. The syndromes associated are neurofibromatosis 1, Noonan syndrome and LEOPARD syndrome. Different location of tumour has different symptoms. In our case, the tumour is present in endobronchus and patient presented with cough with expectoration, weight loss, loss of appetite and new onset of fever. The histological features include monotonous epithelioid to polygonal cells with granular eosinophilic cytoplasm. The nuclei are hyperchromatic, centrally placed with distinct nucleoli. The granular appearance of cytoplasm is due to accumulation of lysosome, mitochondria or secretory granules [6,7]. The special stain Periodic Acid Schiff (PAS) highlights the presence of granules the granules are diastase resistant [8]. The immunohistochemistry shows positivity for S100, CD68, vimentin, inhibin, TFE3, SOX10 and CD56 [2,9]. The criteria for malignant granular cell tumour are six features - spindling of cells, vesicular nuclei with large nucleoli, mitosis (>2/10 hpf 200x magnification), increased nuclear cytoplasmic ratio, pleomorphism and geographical necrosis [2]. Presence of 1 or 2 of the above mentioned features is categorised atypical and presence of 3 or more is categorised malignant. The differential diagnosis includes bronchial carcinoid. The treatment depends on the size of tumour - either conservative treatment or surgical excision. Less than 1 cm is treated with simple excision and more than 1 cm requires surgical resection. Tumour more than 1 cm with surgical excision has high recurrence possibility and monitored for five years for every year [3]. CT chest can be done to see a mass if present. X-ray usually appear normal. Similar case reports pertaining to the location and diagnosis have been published globally and one case report with review of literature shows the comprehensive collection of published bronchial granular cell tumours [10]. According to study most cases had no symptoms or the mass was found incidentally. Our case had symptoms but the nodule was found incidentally. Other case reports [11,12] have described that only 2 to 6% occur in pulmonary location out of which 90% occur in endobronchus region. This explains the rare location of the tumour.

Machuca-Aguado J et al., suggests that smoking is strongly associated with development of granular cell tumour [13]. In our case he is a chronic smoker and alcoholic, might be a predisposing factor.

Treatment for small tumour size less than 1 cm - complete excision of the tumour either by bronchial excision, laser therapy or by sleeve excision [10,11]. Large tumours more than 1 cm require surgical excision and follow-up every year for next five years [11].

The diagnostic pitfalls include rarity, submucosal location. The mucosa sometimes shows pseudoepitheliomatous epithelial hyperplasia which is sometimes confused with squamous cell carcinoma if biopsy is superficial [11].

CONCLUSION(S)

The granular cell tumour of lungs/endobronchus is very rare and only few cases have been reported worldwide. This case highlights the unique location of the tumour and no mass was detected on the imaging studies. Small percent of these tumours occurs in endobronchus location. Differentiation of granular cell tumour from other carcinoma is not possible radiologically. Therefore, it should be kept as one of the differential diagnosis and histopathology confirmation is essential for diagnosis.

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