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A 65-Year-Old Woman with Granular Cell Tumor of the Lung

Mehrdad M. Behnia, Stephen Adams, Philip W. Catalano

Medical College of Georgia, Augusta, Georgia-USA

ABSTRACT

We present a case of a 65 year-old female who admitted with fever and a small infiltrate on the chest x-ray. CT-scan showed presence of a well-circumscribed solitary mass. She underwent surgical resection which showed presence of a granular cell tumor.

Clinical and pathological features of granular cell tumor will be described in this report. (*Tanaffos* 2010;9(1): 59-62)

Key words: Granular cell tumor, Lung

CASE REPORT

A 65 year-old female presented to the hospital because of fever and cough. Chest x-ray revealed presence of a small infiltrate in the right upper lobe (Fig. 1a).

A presumptive diagnosis of pneumonia was made. Therapy was started with intravenous levofloxacin.

Past medical history included hypertension, diabetes and gastric ulcers. She had been treated for esophageal cancer eleven years earlier with chemotherapy and radiation therapy, which resulted in a complete remission.

Laboratory findings revealed a white blood cell count of 11,400. Renal indices were within normal limits. A computerized tomography (CT) scan of the chest revealed a 3.1cm non-speculated lesion in the right upper lobe with no mediastinal lymphadenopathy (Fig. 1b).

Bronchoscopy was performed which showed no endobronchial lesion. Because of concern for malignancy, she underwent a right anterolateral thoracotomy. A segmental resection of the right upper lobe was done. A well circumscribed 3.0 x 3.0 x 3.0 cm. mass was present. The mass was firm, tan-white, and without hemorrhage or necrosis. Histologically, it was composed of uniform cells with abundant granular cytoplasm (Fig. 2). The cells were arranged in small clusters and sheets without glandular or squamous differentiation. The nuclei were round to oval and uniform with inconspicuous nucleoli. There was no significant nuclear atypia and no mitotic figures were identified. An immunohistochemical stain for S-100 was strongly positive in the granular cells (Fig. 3), while stains for cytokeratin 7, cytokeratin 20, synaptophysin, and chromogranin were negative.

Her post operative course was overall uncomplicated and uneventful. She was discharged home in stable condition and follow-up chest x-rays did not show any recurrence of the tumor over a span of two years.

Correspondence to: Behnia MM

Address: 3630 J. Dewey Gray Circle, Augusta, GA 30909

Email address: doctor@mbehnia.com

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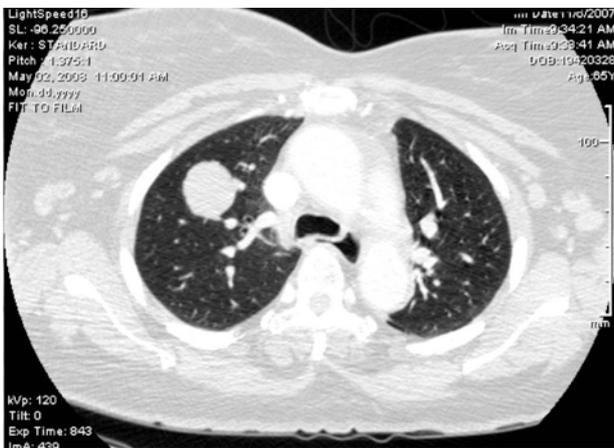
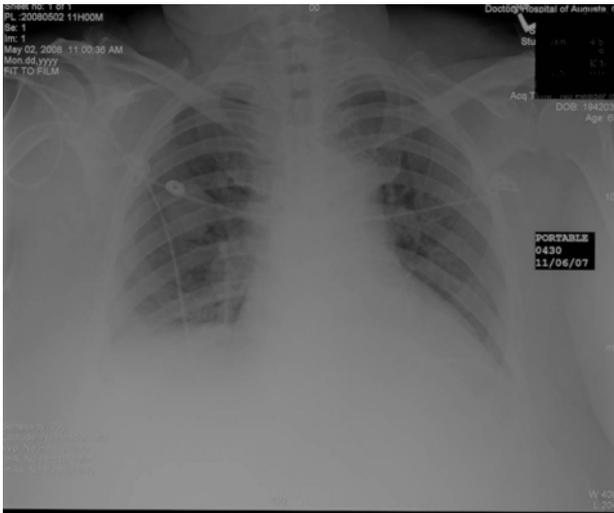


Figure 1a and 1b. Chest X-ray (1a) shows a round lesion and chest CT (1b) reveals a well-circumscribed round mass in the right upper lobe.

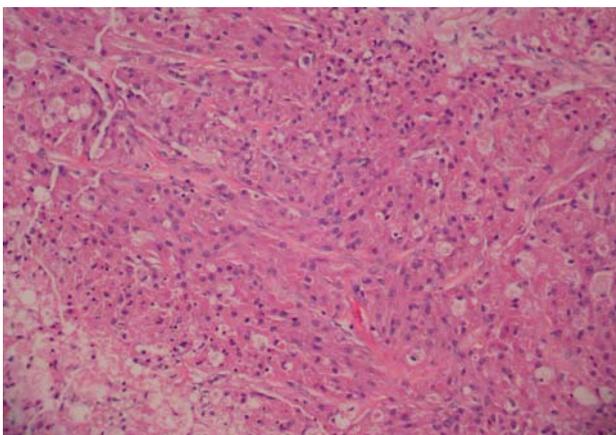


Figure 2. Hematoxylin and eosin (H&E) stain of the tumor

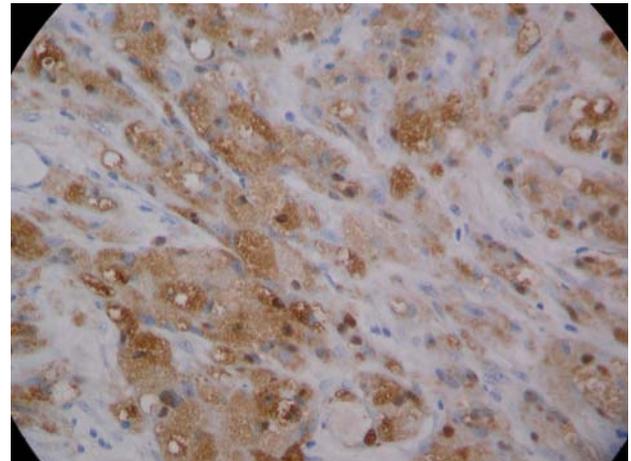


Figure 3. The nuclei and cytoplasm of granular cells, here shown as dark brown, were strongly positive for immunohistochemical S-100 stain

DISCUSSION

Granular cell tumors (GCT) are mesenchymal neoplasms which originate from Schwann cells and are almost always benign (1). They predominantly involve skin, breast or tongue. In the lungs, they are exceedingly rare (2) and only 6 to 10 percent of them involve the respiratory tract (3). Since 1926, fewer than 80 cases involving the lungs have been reported (1). Prevalence in males and females is almost equal (3). Tracheal tumors are more prevalent in women and bronchial tumors are seen equally in males and females (4). Occurrence in young children has also been reported (5).

Grossly, the tumors range in size from 0.3 to 6.0 cm. in diameter, with a median diameter of 1.0 cm (6,7). They are generally well-circumscribed and most are found in a peribronchial location.

Microscopically, the tumors are composed of cells with abundant eosinophilic granular cytoplasm. Nuclei are small and fairly uniform. While they commonly appear well-circumscribed grossly, microscopically they infiltrate the submucosa and around submucosal glands and cartilage (7). S-100 protein, neuron specific enolase, CD68, CD56,

vimentin, and rarely ki-67 are demonstrated with immunohistochemical stains (3,8).

Malignancy is exceedingly rare in GCT of the lung and only case reports have been reported (9). In one report, a 72 year-old female presented with pleural effusion. Although in cytologic evaluation of the pleural fluid malignant cells were not identified, the pleural biopsy showed granular cell tumor and the tumor was metastatic to other distant organs (10). In another report, metastatic testicular germ cell tumor had hilar granular cell tumor involvement (11). In yet a further report, a 5 month-old pregnant female with malignant granular cell tumor in retrotracheal space involving the thoracic inlet and both lungs died of unknown causes (12).

Patients with granular cell tumors may present with dry or productive cough, night sweats, or weight loss. Report of co-occurrence with active tuberculosis has been reported (1). Patients may even be asymptomatic (4). In a large case series study, the presentation was a solitary lesion occurring in trachea or in bronchus found during bronchoscopy; patients presented with hemoptysis, dyspnea, or pneumonia (3,13). The size of endobronchial lesion varied from 0.2cm to 2.5cm (13). Tumors may occur more often in the upper than the lower lobe (4). Also, co-existence with adenocarcinoma of the lung has been reported (14).

Radiographically, the tumors could present as bronchial obstruction on high resolution computed tomography of the chest (15) or as a coin lesion on chest x-ray (8). Hilar presentation has also been seen (11) in addition to a large mass involving superior and posterior mediastinum (16).

Treatment involves curative resection. In endobronchial cases, cryotherapy (17) or other means such as YAG laser or electrocautery have been used (3,4). In the largest European series, a large group of patients did not receive any treatment, but none of them died in follow-up (4).

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