

## CASE REPORT

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# Aspergilloma Mimicking Metastasis in a Case with Laryngeal Carcinoma

Hakan Demirtaş<sup>1</sup>, Ahmet Orhan Çelik<sup>1</sup>, Mustafa Kayan<sup>1</sup>, Ayşe Umul<sup>1</sup>, İsa Döngel<sup>2</sup>

<sup>1</sup>Radiology Department, Süleyman Demirel University, Isparta, Turkey

<sup>2</sup>Chest Surgery Department, Süleyman Demirel University, Isparta, Turkey

**Corresponding author:** Hakan Demirtaş, MD. E-mail: demhakan@yahoo.com

## ABSTRACT

**Introduction:** Aspergilloma is a fungal ball which is composed of hyphal structure fungus, fibrin, mucus and cellular debris and settled in a pre-existing pulmonary cavity or an ectatic bronchial. It may cause colonization in patients with an immunosuppressive and underlying lung disease. Although chest radiography provides valuable information, it can be scanned more effectively by computed tomography (CT). Monitoring fungal ball within the cavity in CT provides establishing the diagnosis. **Case report:** However, in this case report, we presented a case with operated laryngeal carcinoma whom we first had considered to have metastasis and who had received a diagnosis of aspergilloma in CT and Positron emission tomography (PET). **Conclusion:** Imaging findings may remain limited in definitive diagnosis of aspergilloma. Therefore, surgical resection will allow for both pathological diagnosis and treatment.

**Key words:** Aspergilloma, Computed tomography (CT), Positron emission tomography (PET), Lung cancer.

## 1. INTRODUCTION

Aspergilloma has the appearance of a solid mass with round or oval tissue density within the cavitary lung tissue in conventional computed tomography (CT) (1, 2). It is typical to observe air-values in different forms between the mass appearance and the cavity wall (1). It particularly affects the group of patient with suppressed immune system. The primary cancer or metastases of lung can be monitored in many different forms on CT, such as solitary pulmonary nodules, appearance of spicules-contoured apparent mass, increased local density or ground-glass appearance. Early diagnosis and treatment is critical in mortality and morbidity (3). Positron emission tomography (PET) is very effective in the diagnosis, staging and treatment planning of lung cancer. Its sensitivity in detecting pulmonary malignancies is about 96% (3, 4). However, an increased fludeoxyglucose (FDG) uptake can be monitored also in various non-malignant lesions, such as granulomatous infections and inflammations (5). To the best of our

knowledge, there is a small number of patients with aspergilloma who were mistakenly considered to have lung cancer reported in the literature.

## 2. CASE REPORT

A 61-year-old male patient who was operated due to laryngeal carcinoma six months ago. First, MDCT and then, whole body PET-CT scan (643 MBq F-18-FDG i.v.) was performed for the patient due to the lesion monitored on the right apical in PA radiography of the patient, who was followed up stably. The patient's routine blood test results were within the normal ranges. A lesion of 15x10 mm with radially spiculated extensions, in irregular appearance and containing a few microcalcifications was monitored in the apical region of the right lung in thoracic CT (Figure 1, 2). No lymphadenopathy was detected in the mediastinum. It was observed during the PET-CT that the lesion had a moderate F-18FDG uptake (2.40 SUVmax) (Figure 3). Apart from that, no significant pathologic finding was de-



Figure 1. Thorax CT, It is observed that the lesion shows spiculation into the lung parenchyma in the coronal reformatted images and parenchymal window



Figure 2. Torax CT, Lesion with irregular borders and containing millimetric calcified focuses in the axial mediastinal window in the right apical region of the lung. )  
 tected in the chest. In addition, no focus was detected during the PET-CT scan outside the thorax. The patient was first considered to have metastasis in the light of the existing findings. A wedge resection was performed for the patient's lesion (Figure 4). Microscopic examination of the surgical material showed a group of fungal hyphae, and the patient was diagnosed aspergilloma. The patient was not given any antifungal treatment because the entire region was cleaned within the surgical borders and there was not any other focus.

### 3. DISCUSSION

Aspergilloma, also known as mycetoma and fungal ball, is an entity formed within the cavity and associated with colonized fungi (type of aspergillus, as the main source). Aspergilloma is settled within cavities which develop after pathologies, such as tuberculosis, sarcoidosis or blistering emphysema, and preexists (3, 5, 6). In addition, the occurrence of immune response in fully healthy individuals is extremely rare (1). Besides the typical aspergilloma, there is also a wide spectrum of aspergilloma-associated pulmonary diseases that can mimic

malignancies with their symptoms, findings and radiological characteristics (5, 6).

It appears in the form of mass-like appearance with round or oval soft tissue density within the parenchymal cavity without demonstrating any radiologically significant contrast enhancement (1, 2). An 'air crescent sign' can also be monitored. It usually involves the upper lobes and lower lobe superior segments (3). In our case, it involved the apical segment of the right upper lobe of lung. However, its appearance in CT scan was in the form of a lesion with relatively low density which involved parenchyma and had radially spiculated extensions with irregular borders. Also, there was no 'air crescent sign' monitored. Yoon et. al. reported that aspergilloma was in the form of solid lesion in most of the patients in their study in which they compared surgical and CT characteristics of aspergilloma (7). Also, they monitored the lesions in the upper lobes and with low density in half of the patients. In our case, aspergilloma had the characteristic of solid lesion causing shrinkage and spiculation surrounding the lesion parenchyma.

PET-CT is an imaging method that facilitates the separation of benign and malignant and provides guiding (1).

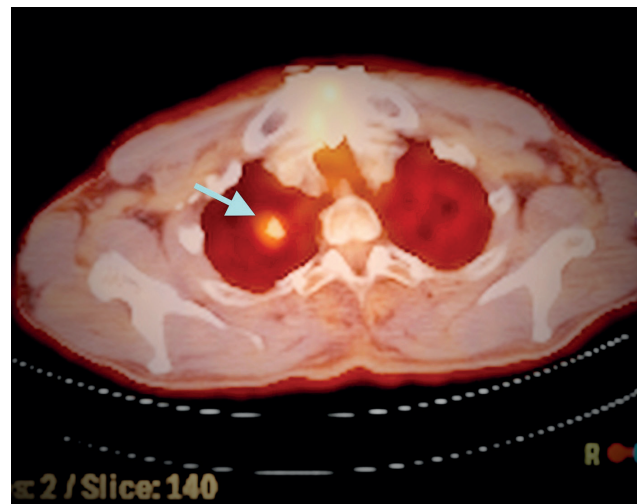


Figure 3. Appearance of the lesion with a moderate FDG uptake in fusion images in PET-CT. )

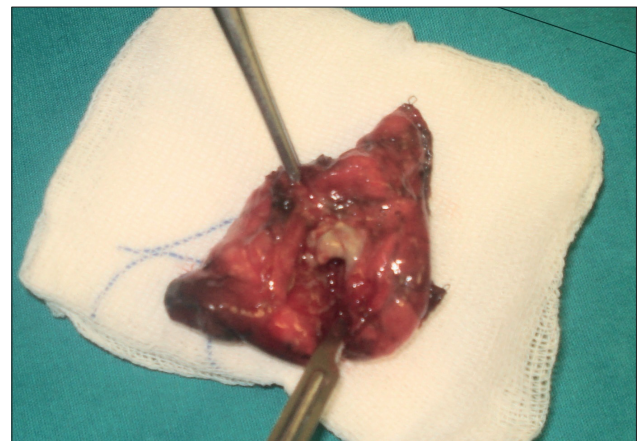


Figure 4. Specimen material of the lesion after wedge resection. Red-looking lung tissue in the lesion and its surrounding area monitored off-white-yellow in colour in total. )

However, low activity tumors and lesions smaller than 1 cm are one of the major causes of false negative results in PET-CT (8), such as carcinoid tumors and metastases of mucinous component. In addition, PET-CT can sometimes show uptake in granulomatous inflammatory conditions such as aspergilloma. In a study conducted with patients with aspergilloma who had been mistakenly diagnosed with lung cancer, the SUVmax range was evaluated as 4.0 to 8.3 (5). Although there were not that high SUV values in our case (SUVmax 2.2), there was a moderate FDG-PET uptake.

Due to the existing imaging findings and larynx ca history of the patient, surgical option was preferred giving particular importance to metastasis. Although there is a small number of patients diagnosed with aspergilloma in contemplation of lung cancer (1, 3, 5) in the literature, there is only one patient who has been suspected of metastasis and diagnosed with aspergilloma (9).

#### 4. CONCLUSION

Our case is a useful and elucidative example in terms of aspergilloma. It should be kept in mind that aspergilloma may bear characteristics which can mimic malignancy besides the conventional CT appearances and cause false positive PET-CT scans. Imaging findings may remain limited in definitive diagnosis of aspergilloma. Therefore, surgical resection will allow for both pathological diagnosis and treatment.

- Author's contribution: All authors contributed in all phases of preparing this article. Final proof reading was made by first author.

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