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Tuberculosis Mimicking Lung Cancer in Pandemic Period

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Abstract It is known that tuberculosis (TB) can mimic many clinical conditions and differential diagnosis can be difficult. Pulmonary TB may present with infiltration in the lung parenchyma with or without mediastinal lymphadenopathy. Pulmonary tuberculosis cases with the appearance of a mass in the lung are available in the literature. It may be difficult to exclude lung malignancy and to prove the diagnosis of tuberculosis in these patients. In this case, a case who applied to our outpatient clinic for routine control and had a mass appearance on thorax computed tomography (CT) is discussed. We think that our case, which was thought to have lung cancer with imaging findings, is important in terms of drawing attention to non-Covid pathologies that may be overlooked during the pandemic period.

Keywords: *Covid-19, lung cancer, tuberculosis*

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1. Introduction

TB has had many illuminating names throughout history. In ancient Greece, TB was called "phthisis," meaning to waste. In Rome, "tabes" was used to describe waste and general decay. "Consumption", a term applied to TB in 19th century England, is particularly evocative and refers to the observation that TB patients are gradually "consumed" by the disease, becoming lighter and weaker over the months. [1]

TB is a serious and contagious disease caused by infection with members of the Mycobacterium tuberculosis complex (MTBC). In the Global Tuberculosis 2019 Report, Turkey's estimated incidence rate for 2018 is 16 per hundred thousand and the estimated mortality rate is 0.51 per hundred thousand. [2]

TB is a predominantly respiratory disease, affecting the lungs in about 80% of cases. [3,4] Approximately 30% of TB cases are extrapulmonary involvement, which may be with or without lung involvement. TB can affect almost any organ, but peripheral lymph nodes and the pleural cavity are the most common sites of extrapulmonary involvement. [5]

Tuberculosis can mimic many clinical conditions as well as malignancy. There are many similarities between tuberculosis and lung cancer. Both have a high prevalence, cause disease in the lung parenchyma, and, above all, are characterized by similar symptoms. Symptoms such as fever, cough, sputum production, hemoptysis, weight loss, and anorexia are common in both tuberculosis and lung cancer. [6]

2. Case

A 26-year-old male patient had night sweats for 1 month and a dry cough for 2 weeks. He had no known additional disease other than hypertension. In the patient's first admission to other hospital at that time, CRP: 62 mg/l, ferritin: 596 ng/ml, leukocyte count: 15 x $10^3/\mu L$. PA radiography and thorax CT showed infiltration areas in the left parahilar area (Figure 1). Although it was found to be compatible with bacterial pneumonia in the foreground, because Covid-19 could not be excluded, the patient was started on appropriate treatment for that period. The Covid PCR test was negative.

After 1 month, the patient applied to our outpatient clinic with complaints of weight loss (5 kg in the last 3 months) and intermittent dyspnea. There was no history of tuberculosis or close contact with an individual with tuberculosis. In the patient's family history, it was learned that his uncle and grandfather died of lung cancer. CRP level was found to be 30 mg/L in laboratory, other laboratory tests were within normal limits. On physical examination, rhonchi was heard in the left upper zone on auscultation. Contrast-enhanced thorax CT angiography was performed. Pathological lymph nodes in mediastinal lymphatic stations, 31x18 mm in size in the subcarinal region and 27x15 mm in the subaortic region; In the upper lobe, there were nodular lesions with a size of 20x15mm, extending superiorly along the bronchovascular bundle, adjacent to the apicoposterior segment bronchus, and 14x9mm parenchymal soft tissue density based on major fissures (Figure 1). The previous thorax CT was re-examined and the lesions were seen there as well.

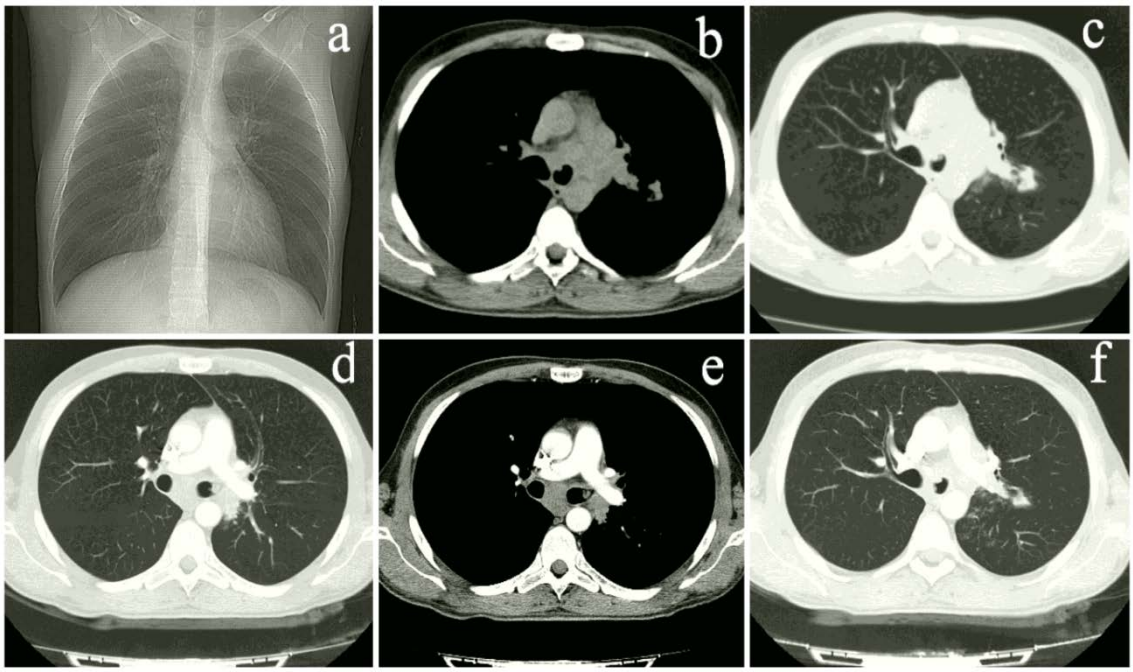

Figure 1. Suspected opacity in the left parahilar area in the PA X-ray at the time of admission (Figure 1a); infiltration in the left parahilar area, parenchymal and endobronchial mass appearance in the thorax CT imaging performed at the time of admission (Figure 1b and Figure 1c). Mass appearance in the left parahilar region, subcarinal LAP, parenchymal infiltrates and endobronchial mass appearance in the control thorax CT (Figure 1d, Figure 1e, Figure 1f)

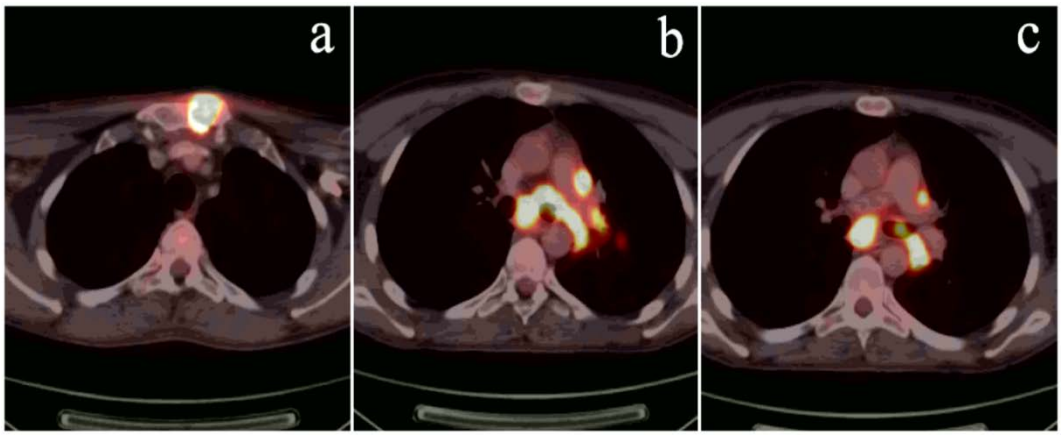

Figure 2. Involvement in the sternum, subcarinal area, left main bronchus, paraaortic region on PET/CT (Figure 2a, Figure 2b and Figure 2c)

On PET/CT, intensely increased FDG uptake (SUDmax:21,7) was detected in the soft tissue density lesion measuring 2.6x1.1 cm, endobronchially located in the left lung main bronchus and extending towards the lower lobe superior segment bronchus (SUDmax:21.7); increased FDG uptake (SUDmax: 11,6) was detected in a 1.3x1.3 cm nodular soft tissue lesion observed adjacent to the bronchus and in a 1.2x1.5 cm nodular soft tissue lesion abutting the major fissure at the base of the left lung upper lobe apicoposterior segment. There was intense increased FDG uptake in the mediastinum, bilateral upper paratracheal, bilateral lower paratracheal, aorticopulmonary, prevascular, subcarinal and left hilar lymph nodes (SUDmax: 21.4). A low level of FDG uptake (SUDmax: 2.3) was detected in one lymph node with a size of 0.6 cm at the right common iliac level. Intensely increased FDG uptake in the left spina scapula and large lytic lesion areas observed in the left half of the manibrium sterni; Intensely increased FDG uptake (SUDmax: 17.3) with hypometabolism in the central part of the soft tissue density mass lesion measuring 5.0x4.3 cm, which causes destruction in the right half of the S1 vertebra and shows the impression of infiltration into the right foramen; increased FDG uptake was observed in the lytic lesion observed in the left acetabular region (SUDmax: 6.4) (Figure 2).

In his bronchoscopic examination, a mass lesion was seen starting from the left main bronchus and extending to the distal lower lobe bronchus. The pathology result of the lesion in the left main bronchus resulted as a necrotizing spindle cell lesion. Lavage ARB was negative. The patient underwent control bronchoscopy. Repeated bronchoscopy revealed necrotizing granulomatous inflammation. Mycobacterium tuberculosis was grown in the tuberculosis culture. As he was sensitive to all first-generation drugs, the patient was started on quadruple antituberculosis therapy. Isoniazid 5 mg/kg, rifampicin 10 mg/kg, ethambutol 20 mg/kg and pyrazinamide 25 mg/kg were given for 2 months; Afterwards, isoniazid 5 mg/kg mg and rifampicin 10 mg/kg 4 were given, and the treatment was completed for a total of 6 months. The

patient's symptoms regressed with treatment, and the lesions disappeared in follow-up imaging.

3. Discussion

Tuberculosis and lung cancer are two different clinical conditions that can be confused with each other. Especially in regions where tuberculosis is endemic, such as our country, tuberculosis is among the differential diagnoses when examining patients for malignancy. [7] It should not be forgotten that in lesions with mass appearance in the lung parenchyma, metastatic malignancies may also be present together with primary lung malignancies.

Pulmonary tuberculosis can occur in many forms, and chest X-ray and CT findings may not be distinguishable from lung cancer findings. [8] Tuberculosis can be confused with malignancy because of irregularly circumscribed consolidated areas, thick-walled cavitary lesions, and endobronchial mass appearance. [9] In addition, many symptoms such as weight loss, cough, and sputum can also be seen in lung cancer. [10]

Although PET/CT is used for the differential diagnosis of lung cancers and for determining the stage, it can also be positive in tuberculosis. Therefore, the use of PET/CT in the differentiation of lung cancer and tuberculosis is limited. In a study, SUV max values of 16 benign lesions, 12 of which were tuberculoma, and 14 malignant lesions were compared; and the mean uptake value in malignant lesions was 11.02 (SD:6.6); 10.86(SD:8.9) were found in benign lesions. When tuberculomas were removed, a statistically significant difference emerged. [11] In our case, the patient's family history of lung cancer, clinical features, thorax CT scans and PET/CT findings were suggestive of malignancy. Subsequently, the patient was diagnosed with pulmonary tuberculosis, with tuberculosis culture positivity and necrotizing granulomatous inflammation in pathology after bronchoscopic biopsy performed on the lesion suggestive of malignancy.

Radiology is very critical for the diagnosis, especially in PCR-negative patients, in distinguishing between tuberculosis and COVID-19; but when it is not possible to exclude COVID-19 with radiology, firstly covid treatment is started. [12] False negativity of coronavirus 2 (SARS-CoV-2) detection in nasal swabs is 36.4%. [13] On thorax CT, it showed a diagnostic sensitivity of 70-93% and a specificity of 93-100% for COVID-19. [14]

In a case published in 2020 by Carbone et al., a patient diagnosed with ovarian cancer complained of shortness of breath and fever, and was diagnosed with covid-19 pneumonia by radiological imaging after hospital admission and received treatment for 3 weeks; later, pulmonary metastasis of ovarian cancer was detected. [15]

As in the case we presented, tuberculosis has clinical similarities with covid-19 pneumonia and lung cancer. For this reason, microbiological and pathological examinations should be performed when necessary for differential diagnosis. It should not be forgotten that parenchymal involvement of diseases such as lung cancer and tuberculosis may be overlooked during the pandemic period.

4. Conclusion

It is customary that the first diagnosis considered in respiratory problems developing during the pandemic period is covid 19 pneumonia. Emergency services may not be efficient enough in the differential diagnosis of these patients. Therefore, patients should be directed to the outpatient clinic control after treatment. After detailed questioning of symptoms, malignancy and tuberculosis should be among the options that can be thought. The differential diagnosis of malignancy and tuberculosis should be made pathologically/microbiologically.

References

[1] Dubos R, Dubos J. *Tuberculosis, Man, and Society: The White Plague*. Boston, MA: Little, Brown & Co; 1952. 142-143.

[2] Global tuberculosis report 2019. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO

[3] Shah NS, Cavanaugh JS, Pratt R, et al. Epidemiology of smear-negative pulmonary tuberculosis in the United States, 1993-2008. *Int J Tuberc Lung Dis*. 2012; 16(9): 1234-1240.

[4] CDC. Reported Tuberculosis in the United States, 2011. 2011:1-172.

[5] Peto HM, Pratt RH, Harrington TA, LoBue PA, Armstrong LR. Epidemiology of extrapulmonary tuberculosis in the United States, 1993-2006. *Clin Infect Dis*. 2009; 49(9): 1350-1357.

[6] Cherian MJ, Dahniya MH, Al-Marzouk N, Osmanagich E, Abul A, Haider A. Primary pulmonary tuberculosis presenting as mass lesions and simulating tumours in adults& children. *Australas Radiol*. 1998; 42(4): 303-312.

[7] Atas E, Kesik V, Kismet E, Koseoglu V. Pulmonary tuberculosis mimicking metastasis in a patient with osteosarcoma. J Pediatr Hematol Oncol. 2012 Oct;34(7):536-7.

[8] Aisenberg GM, Jacobson K, Chemaly RF, Rolston K V., Raad II, Safdar A. Extrapulmonary tuberculosis active infection misdiagnosed as cancer: Mycobacterium tuberculosis disease in patients at a Comprehensive Cancer Center (2001-2005). *Cancer*. 2005; 104(12): 2882-2887.

[9] Mimicking PT, Report R-AC. Metastasis. 2021; 3(1): 1-4.

[10] Lee CT, Kang KH, Koh Y, et al. Characteristics of lung cancer in Korea, 1997. *Lung Cancer*. 2000;30(1):15-22.

[11] Sathekge MM, Maes A, Pottel H, Stoltz A, van de Wiele C. Dual time-point FDG PET/CT for differentiating benign from malignant solitary pulmonary nodules in a TB endemic area. *South African Med J*. 2010; 100(9): 598-601.

[12] Sarinoglu RC, Sili U, Eryuksel E, Yildizeli SO, Cimsit C, Yagci AK. Tuberculosis and COVID-19: An overlapping situation during pandemic. *J Infect Dev Ctries*. 2020; 14(7): 721-725.

[13] Xie C, Lu J, Wu D, et al. False negative rate of COVID-19 is eliminated by using nasal swab test. *Travel MedInfect Dis*. Epub ahead of print 11 April 2020.

[14] Francone M, Iafrate F, Masci GM, et al. Chest CT score in COVID-19 patients: correlation with disease severity and short-term prognosis. *Eur Radiol*. 2020; 30(12): 6808-6817.

[15] Carbone F, Palaia I, Santangelo G, et al. Pulmonary and pleural metastasis mimicking COVID-19 infection in stage IV ovarian cancer: a case report. *Tumori*. 2020; 106(6):NP73-NP75.