Non-Small Cell Lung Carcinoma Treated as Tuberculosis

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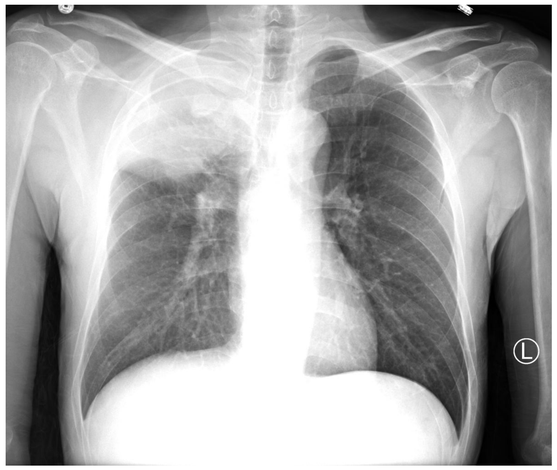
BACKGROUND

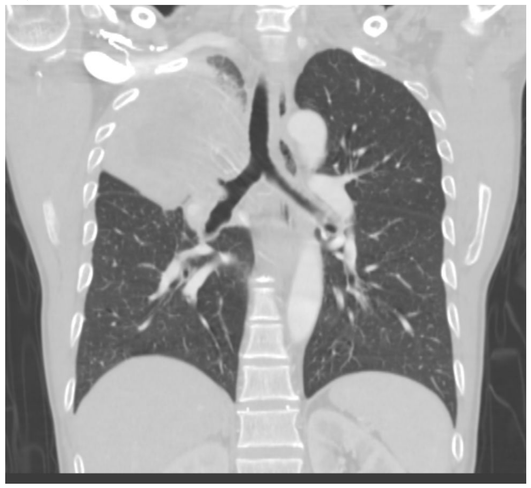
A 50-year-old man with an extensive smoking history presented to an outside clinic and required screening for interferon-gamma release assay for work. Approximately 5 years ago, the patient was treated for latent tuberculosis for 6 months. The patient's interferon-gamma release assay was positive, and he therefore received a chest x-ray which was concerning for a mass in the right upper lung. He was then transferred to our hospital with concern for tuberculosis versus malignancy. Prior to presentation, he had an intermittent, dry cough. The patient denied any fevers, shortness of breath, night sweats, and hemoptysis. Of note, the patient stated that since his infection, he was being monitored every two years with a chest x-ray that usually shows 'haziness.' Labs on admission included Na of 130, WBC 13.34, eosinophils 10.8%, AFB smear negative, AFB culture negative for TB, AFB by DNA probe negative for M. tuberculosis and M. avium, galactomannan Ag negative and a low vitamin B12 level. Of note, a bronchial alveolar lavage was done and cytology from the BAL was negative for malignancy. For imaging, the patient underwent chest X-ray, CT chest with and without contrast, PET CT and MRI brain. The patient also underwent CT guided lung biopsy for which the pathology showed non-small cell carcinoma PD-L1+, tumor cells positive for TTF1, keratin (OSCAR), p63, p40, negative EGFR, negative ROS1 and negative ALK gene rearrangement. Of note, AFB and GMS stains negative for acid fast organisms.

IMAGING

Chest X-ray revealed a focal consolidation in the right upper lung and no pleural effusions or pneumothorax.

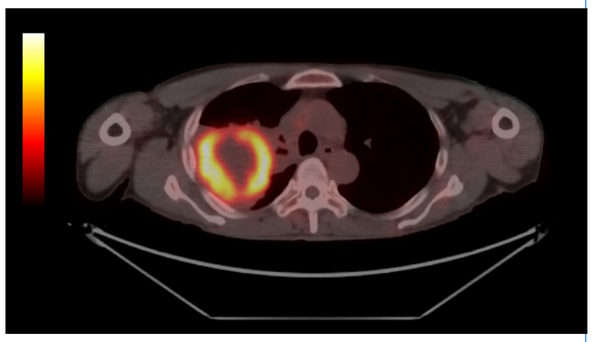


CT chest revealed opacities within the right mainstem bronchus. There were thickened walls and intraluminal opacities within the lower lobe segmental and subsegmental bronchi. The pulmonary parenchyma showed a large, heterogeneous enhancing mass-like consolidation with a central area of low attenuation in the right upper lobe measuring approximately 9.0 x 8.0 x 10.0 cm (AP x TV CC).



IMAGING (CONTINUED)

PET CT revealed a large, centrally necrotic mass in the right upper lobe which was FDG avid with an SUV max of 22.5 and most likely representative of a primary lung malignancy.



DISCUSSION

Approximately 10 million new cases of tuberculosis were diagnosed in 2017 [1]. Postprimary tuberculosis usually develops in adult immunocompetent patients who have developed immunity to primary tuberculosis. Characteristic chest X-ray findings are demonstrated by consolidation in the apical and upper lung zones, nodules, and cavitation [2]. A noteworthy reminder is patients treated successfully for tuberculosis will continue to have a positive IGRA test.

In 2020, there were approximately 247,270 new cases of lung cancer diagnosed [3]. Making a diagnosis of lung cancer can be challenging and it is preferred to use the least invasive method with the highest diagnostic yield, with certain methods having much greater sensitivity in detecting cancer. For peripherally located masses, radiologically guided transthoracic biopsy has a sensitivity of 90% [4].

DISCUSSION (CONTINUED)

This case highlights the diagnostic challenges and uncertainty that can arise in cases of patients previously treated for tuberculosis. While those patients with postprimary tuberculosis may present with chest X-ray findings similar to in this case, a broad differential must be continually maintained. In addition, this case highlights the low diagnostic yield of bronchial alveolar lavage cytology in the diagnosis of lung carcinoma, especially in cases of more peripherally located masses. Another important highlight of this case is the role of PET-CT in making a diagnosis of malignancy. A typical SUV max cutoff of 2.5 is used to distinguish between benign versus malignant processes, that alone should not completely disregard other causes. Infectious processes, like tuberculosis can appear similar both metabolically and morphologically on imaging [5]. The gold standard in making a definitive diagnosis of lung cancer continues to be biopsy.

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