

The present role of the thoracic surgeon in the diagnostic workup of tuberculosis

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RELATED ARTICLE

by Korzeniewska-Koseła et al, see p. 633

I read with interest the paper by Korzeniewska-Koseła et al¹ focusing on the present role of the thoracic surgeon in the diagnostic workup of tuberculosis. The authors emphasize the significance of considering tuberculosis in the differential diagnosis of thoracic abnormalities (pulmonary nodules, enlarged lymph nodes, pleural effusions) of unknown etiology, referred to the thoracic surgeon as suspicious neoplastic lesions.

Although nowadays the prevalence of tuberculosis in Europe is low, in many high-income European countries the frequency of pulmonary mycobacteriosis is not anecdotal, and considering the high incidence of lung neoplasms in developed countries, the concurrence of both conditions represents a therapeutic and diagnostic challenge.²

Tuberculosis is one of the top 10 causes of death worldwide and the leading cause of death from a single infectious agent; 30 countries with high tuberculosis burden account for almost 90% of patients developing clinically evident tuberculosis each year.³ On the other hand, about 85% of patients with this disease can be successfully treated with a 6-month drug regimen, presenting the added value of reducing the spread of the infection.³ For this reason, it is crucial to obtain an early and correct diagnosis, and since pulmonary tuberculosis is the most frequent clinical manifestation of the disease, thoracic surgeons play a pivotal role in the diagnostic workup.

The latest available data disclose an estimated 10 million cases of tuberculosis worldwide and 1.2 million tuberculosis-related deaths among HIV-negative people in 2019.³ Geographically, the vast majority of patients who developed tuberculosis in 2019 lived in South-East Asia (44%), Africa (25%), and the Western Pacific (18%), with smaller proportions in the Eastern Mediterranean (8.2%), the Americas (2.9%), and Europe (2.5%).³

In light of these data, clinical manifestations of tuberculosis could be considered a minor issue

in Europe; on the contrary, as clearly pointed out by Korzeniewska-Koseła et al,¹ 5075 cases of pulmonary tuberculosis were diagnosed in Poland in 2019 and the incidence was 13.2 per 100 000 population¹; the threshold considered to define a country as low prevalence being less than 10 cases per 100 000 inhabitants. Similarly, in Italy, the incidence rate was 3.8 cases per 100 000 for people born in the country and 50 to 60 cases per 100 000 for those born abroad.⁴ The current migratory movements along many different routes, together with globalization and intense cultural and social relationships between the countries contribute to the spread of infectious diseases, as the recent COVID-19 pandemic has dramatically shown. Thus, tuberculosis should not be considered a rare disease, and even clinicians practicing in high-income Western countries should always be aware of its possibility before planning pulmonary resections of non-histologically examined lung nodules.²

As computed tomography (CT) and fluorodeoxyglucose positron emission tomography (FDG PET) findings of tuberculosis are very similar to those observed in lung cancer patients—both those related to the primary tumor and to the affected lymph nodes—a differential diagnosis can be challenging, particularly when neoplasms and tuberculosis coexist in the same pulmonary lesion, lymph nodes, or pleura.^{5,6} In our institutional experience, CT findings showed solid lesions in 90% of the study population, thus highlighting that pulmonary tuberculosis is almost identical to lung tumors as far as this imaging modality is concerned. Moreover, PET standardized uptake values (SUVs) of tuberculous lesions were the same as those of lung cancers; in contrast, patients presenting with synchronous tuberculosis and lung cancer had higher SUVs, although we did not identify any useful cutoff value to enable an effective differentiation between malignancy and infection.²

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In addition, patients with neoplastic pulmonary lesions and pulmonary tuberculosis often present the same symptoms, such as cough, fever, hemoptysis, weight loss, expectoration, and anorexia.^{7,8}

In light of personal experience and on the basis of the results reported by Korzeniewska-Koseła et al,¹ I would rather suggest performing all the available steps to obtain a histologic diagnosis before surgery, involving dedicated interventional pulmonologists for bronchoscopic approaches as well as experienced radiologists for CT-guided transthoracic biopsy. A surgical diagnostic approach should then be considered as the last resort, after previous failure of the less invasive techniques, both in the case of planned minor lung resections⁹ and mainly in the case of extended ones.¹⁰ During bronchoscopy for suspected lung cancer, it is advisable to perform an acid-fast bacilli smear and mycobacterial culture on samples of bronchial secretions in the case of potential tuberculous lesions. This allows to identify patients as having smear-positive or smear-negative pulmonary tuberculosis, according to the World Health Organization criteria.³

Tuberculosis and lung neoplasms have similar risk factors, as has tobacco smoking. The impaired clearance of pulmonary secretions and the reduced activity of alveolar macrophages reported in smokers play a significant role in helping the *Mycobacterium tuberculosis* complex skip the host's immune system.¹¹ Moreover, historically, the causal relationship between smoking and lung cancer has been well proven.

Previous studies disclosed that pulmonary tuberculosis was associated with an increased risk of lung cancer because of chronic lung inflammation and fibrosis¹²; moreover, the disease may stimulate an intense reaction of the immune system by activating inflammatory pathways within the lung, which culminates in an increased production of mediators involved in DNA damage, thus causing carcinogenesis as well as increasing antiapoptotic activity.^{13,14} Finally, chronic inflammatory state caused by tuberculosis infection increases pulmonary fibrosis, which seems to be associated with reduced lymphatic clearance of particles from the infected region.¹⁵

In conclusion, although not very frequent, incidental diagnosis of pulmonary tuberculosis among patients scheduled for oncologic lung resection is not uncommon. In light of the increasing frequency of tuberculosis infections in developed countries, thoracic surgeons, as well as pulmonologists and anesthesiologists, should always be aware of the possibility of this disease before referring patients with non-histologically examined pulmonary lesions for lung resections.

ARTICLE INFORMATION

DISCLAIMER The opinions expressed by the author(s) are not necessarily those of the journal editors, Polish Society of Internal Medicine, or publisher.

CONFLICT OF INTEREST None declared.

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