

## Editorial

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## Misdiagnosis Murder: Disguised TB or Lung Cancer?

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Medical misdiagnosis dilemma of Tuberculosis (TB) *versus* Lung Cancer (LC) and their pre-judged unsuitable grueling treatment leading to numerous unnecessary deaths worldwide.<sup>1</sup> Globally, numerous patients with incurable LC are often misdiagnosed as sputum smear-negative pulmonary-TB (PTB) and *vice-versa* leading to delayed treatment and incorrect medication.<sup>1-3</sup> In most of the cases, LC stay undiagnosed for long periods of time as it shows no symptoms in early stages of disease. PTB and LC often show analogous symptoms including short painful breathing, persistent cough (sometimes bloody cough), tired-ness and inexplicable weight loss of patient.<sup>4</sup> Preliminary radiological features and symptoms of both ailments are so similar and imitate each-other; clinicians over and over again fail to distinguish it, resulting in many avoidable losses. In low-income countries like Africa, China and India, with high prevalence of PTB, misdiagnosis is more often which deceive clinicians to diagnose LC as PTB. Various factors are cited to be responsible for this situation in developing countries, includes insufficient infrastructure and socio-economic condition. Deferred prognosis and diagnosis promotes spread of the disease to other parts of the body, which can lead to more serious symptoms and eventual fatalities. Timely diagnosis of LC can increase the possibility of tumor ablation and chemo-radiotherapy to stave off the ailment. More often, clinicians begin anti-TB treatment for LC without confirmation of diagnosis that worsens the situation, to which I censure as “Misdiagnosis-murder”. Similarly, wrong or delayed diagnosis of TB leads to poorer prognosis and higher likelihood of relapse of disease. In many instances, diagnosis of latent TB remains unnoticed as it does not display symptoms of TB in the most of the infected individuals.

Physicians primarily rely on chest X-rays as the initial step for detecting the LC or PTB. One of the major reasons of misdiagnosis may be the unremembered art of examination of chest X-rays and its mis-interpretation by clinicians in the era of advanced magnetic resonance imaging (MRI) and computed tomography (CT) scan. Lack of awareness, high cost of diagnosis and limited availability of high-end diagnosis machines in developing countries adds to wrong judgment.

Sceptical lung opacities in chest X-rays are repeatedly mis-interpreted as PTB in developing countries without further investigations and authentication. This pacification may be suggestive but not diagnostic as it only show concerned suspicious areas in the lungs but are not capable to confirm the disease. Opacities can be non-specific indication with a broad aetiology for any of these lung ailments including PTB, pneumonia, LC, bronchitis, sarcoidosis, upper respiratory infection etc.<sup>5</sup> Calcified nodular granulomas/lesions, fibrotic scars and enlarged lymph nodes in TB infected lungs may be recognized on X-ray film which could imitate lumps of LC.<sup>5</sup> Furthermore, enlarged lymph nodes and pleural effusion are common features for both the diseases. Here, physicians need to carefully review the diagnosis and relate it with existing symptoms and patients history of TB infection or LC. Once suspected mass or lump emerge in chest X-ray; further examination including bronchoscopy, CT, MRI, etc, is to be done to verify and confirm the disease. A CT and Positron Emission Tomography (PET) may be used for differential diagnosis of concerned ailments, which present cross-sectional 3D imaging with comprehensive details of the lung.<sup>6</sup> Investigational clinical and radiological attributes indicative of LC, such as opacification of air-spaces of lungs, pulmonary consolidations with irregular

margins, thick-walled cavities and parenchyma infiltrate with elevated metabolic activity on the CT and PET scan are also similar for PTB4.<sup>5</sup>

The most suitable and inexpensive way to evade misdiagnosis is to examine each and every patient suspected with PTB and also having risk factor history for LC, is sputum analysis for mycobacterium (AFB staining) and tumor cells (Cytology). Biopsy or lymph node aspiration fluid can be used for cytology or microbiological studies (AFB Staining, microscopy, PCR and bacterial culture) further authenticate the diagnosis results. Once disease is identified, a therapeutic strategy can be designed.

Certainly, these diagnosis tests ought to be checked, re-checked, verified and confirmed to end the stigma. Careful history and examination can help clinician to suspect the right disease. Relying solely on the radiological finding for differentiation of both of these diseases cannot be judicious and the diagnosis should be confirmed by pathological and microbiological tests. From my perspective, differential-diagnosis should be conducted holistically encompassing (i) identification of probable ailment associated with particular symptoms (ii) carry out a set of specific diagnostic tests and (iii) exclude other medical conditions that do not correlate with diagnosis results, until a decisive diagnosis is found.

#### CONFLICT OF INTEREST

There are no potential conflicts of interest to disclose for this work.

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