Tuberculosis: a mimicker of malignancy

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ABSTRACT

Tuberculosis infection remains an important cause of mortality. The clinical and radiological manifestations can be non-specific and resemble many other conditions, including malignancies. This could lead to diagnostic delay. We report the case of a 48-year-old woman with tuberculosis presenting with a right upper lobe mass manifesting as metastatic lung cancer. She also had liver cirrhosis secondary to chronic hepatitis B infection. She developed hepatitis two weeks into her tuberculosis treatment. Our case highlights the importance of considering tuberculosis in patients suspected to have underlying malignancy and to be aware of the potential adverse effects of treatment.

Keywords: Anti-tubercular drugs, hepatotoxicity, lung cancer, malignancy

INTRODUCTION

Tuberculosis remains an important cause of morbidity and mortality especially in underdeveloped and developing nations. The manifestations can be varied and may present with a wide spectrum of clinical signs and symptoms resembling many other conditions that can be misleading to clinicians, especially cancers. Similarly the radiological manifestations can also vary. It is also important for clinicians to be aware that presence of multiple conditions; although uncommon may occur especially with the rising incidence of cancers such as lung cancers.

It is important to establish a diagnosis before starting anti-tuberculous therapy given the potential toxic effects of anti-tubercular medications. We report a case of pulmonary tuberculosis manifesting as pulmonary carcinoma in a patient with underlying liver cirrhosis secondary to chronic hepatitis B infection.

CASE REPORT

A 47-year-old lady with a background history of diabetes mellitus and hypertension presented with weight loss, anorexia and fullness in the left supra-clavicular area. She was a non-smoker and denied any respiratory complaints. On clinical examination, she was overweight but was comfortable and had a palpable lymph node in the left supra-
clavicular fossa. There was dullness to percussion and diminished air entry in the right infra-clavicular area consistent with consolidation or mass and mild abdominal distension consistent with ascites.

A chest radiograph showed opacity of the right upper zone suspicious of lung cancer (Figure 1a). A staging computed tomography (CT) scan showed a large mass (7 x 7 cm) in the right upper lobe compressing the bronchus and abutting the mediastinal pleura (Figure 1b). There were also numerous lymph nodes seen in the right para-tracheal and sub-carinal regions. Other abnormalities detected included a lytic lesion in the medial end of the left clavicle and ascites (Figure 1b-d). A preliminary diagnosis of lung cancer with metastases was made.

She was detected to be positive for hepatitis B antigen but gave no history of jaundice or any abdominal symptoms. Her blood investigations revealed evidence of mild anaemia, elevated erythrocyte sedimentation rate of 88 mm/hr (normal <10) and C-reactive protein of 9.5 ng/L (normal <0.35). There was mild derangement in liver functions with hypoalbuminaemia. The renal parameter was normal apart from mild hyponatraemia.

She proceeded to a CT guided fine needle aspiration and biopsy of the lesions. These were reported to show the presence of large numbers of lymphocytic infiltrate and multi-nucleated giant cells with caseous material consistent with tuberculosis. Staining for acid-fast bacillus was also positive. There was no evidence of malignancy from both biopsies. She was treated for pulmonary tuberculosis with involvement of clavicular bone and associated decompensated chronic hepatitis B cirrhosis.

She was started on anti-tubercular therapy (isoniazid, rifampicin, ethambuthol and pyrazinamide) and was referred to the National Tuberculosis Centre for directly observed therapy (DOT). However she was readmitted two weeks later with clinical deterioration and worsening liver profiles. Isoniazid, rifampicin and pyrazinamide were stopped and she was started on alternate non-hepatotoxic regimes containing fluoroquinolones (ciprofloxacin), streptomycin along with ethambutol. Her hepatitis B DNA viral load was elevated and she was started on

Figs 1: a) Radiograph showing right upper zone mass, b) Axial computed tomography (CT) scan showing eroded sternum (arrow), c) Right upper lobe mass (*) and d) Liver cirrhosis and ascites (*)
anti-viral therapy (Lamivudine). The probable causes of her hepatitis were either drug-induced or hepatitis B related. Once the patient’s condition and liver profiles had improved, she was re-challenged in a sequential manner as per the guidelines with close monitoring. She was able to tolerate a combination of streptomycin, isoniazid, ethambutol and rifampicin. This was continued for two months followed by six months of isoniazid and rifampicin.

Follow-up chest radiograph done seven months after diagnosis showed that the lung lesion had not resolved. As she was well, it was decided to monitor her condition. Another repeat chest radiograph done three months later showed persistence of the mass. As there was concern that the patient may have dual pathologies, a repeat biopsy of the lung lesion was carried out. Again the histology showed chronic granulomatous changes without evidence of malignancy. Staining for AFB was again positive. She was retreated with another six months of therapy with clinical improvement. She remained well and follow-up chest radiographs done 19 and 24 months (Figs. 2) after completion of therapy showed slight regression of the consolidation.

DISCUSSION

Tuberculosis continues to be a menace despite the organism being identified by Koch and studied by the scientific communities for more than a century. It remains an important infective cause of morbidity and mortality worldwide. The World Health Organisation (WHO) estimated that a third of the world’s population is currently infected with the mycobacterium with an estimated 1.7 million deaths in 2009. ¹ Southeast Asia and Africa have the highest incidence accounting for 35% (180/100,000 population) and 30% (340/100,000) respectively of global burden with 480,000 (27/100,000 population) and 450,000 (50/100,000 population) deaths reported respectively based on the 2009 WHO report. ¹

Tuberculosis can affect almost any organ and the manifestations can be non-specific, mimicking other disorders that include other infectious diseases, chronic inflammatory disorders and even malignancies. ²-⁶ Such mimicries contribute to diagnostic difficulties resulting in treatment delay. Presentations with a mass as in our case are not uncommon and are often mistaken for underlying neoplasm. ²-⁴ These have been
Radiological manifestations of pulmonary tuberculosis depend on the stage of infection, active or non-active. Radiological findings suggestive of either active or non-active infections are shown in Table 1. Of these, the most common manifestation is parenchymal infiltrates, typically in the apices and posterior segments of upper lobes. In patients with Human Immune Deficiency virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS), tuberculosis needs to be considered in patients with any pulmonary abnormalities and even in those with normal chest radiograph. It is also important to be aware that other infectious diseases can also present with a mass. Rolston et al. reported that 46% of the studied mass lesions due to infection were due to fungal infections followed by tuberculosis in 24%.

More importantly, as the population ages and the incidence of cancers increase, it is not unexpected to see cases of concomitant dual pathologies. These have been reported for the various organs but more common in the pulmonary and gastrointestinal systems. Unless suspected, the correct diagnoses may be delayed or missed resulting in poor outcomes.

Our case also highlighted the risk associated with treatment. The main side effects of standard anti-tuberculous therapy include non-specific gastrointestinal complaints, hepato-toxicity, thrombocytopenia, rash, pruritus and, fever. Drug-induced hepatitis is most commonly attributed to pyrazinamide, isoniazid and rifampicin and is the most serious complication with a mortality rate of five percent. Our patient developed hepatitis two weeks after starting treatment, consistent with drug-induced hepatitis. However, in our case we cannot be completely certain that the hepatitis was due to the treatment as our patient also had early cirrhosis secondary to chronic hepatitis B infection. Furthermore, she was able to tolerate anti-tubercular treatment without pyrazinamide. It has been shown that the risk of hepatotoxic effects is higher in patients with chronic liver disease. A study from India showed that anti-tuberculous induced hepatotoxicity was not influenced by age, gender, and alcohol intake but with underlying chronic liver disease and Hepatitis B carriers. In hind sight, initiation of anti-viral therapy in our patient at diagnosis might have prevented the hepatitis secondary to chronic hepatitis

Table 1: Chest radiograph findings of tuberculosis infection (Active and non-active).

<table>
<thead>
<tr>
<th>Radiological findings</th>
<th>Active</th>
<th>Non-active</th>
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<tbody>
<tr>
<td>Infiltrates</td>
<td></td>
<td>Discrete fibrotic scar/linear opacities</td>
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<tr>
<td>Consolidations</td>
<td></td>
<td>Discrete nodules (without calcification)</td>
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<tr>
<td>Cavitating lesions</td>
<td></td>
<td>Discrete fibrotic scar with volume loss</td>
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<td>Nodules</td>
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<td>Bronchiectasis</td>
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<td>Pleural effusion</td>
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<td>Hila/mediastinal lymph nodes</td>
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<td>Miliary shadowings</td>
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<td>Interstitial disease</td>
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Note: There are overlap between inactive and active as reactivation of infection can occur.
B and may probably have even reduced the risk of anti-tubercular related hepatitis.

In conclusion, our case highlighted several interesting aspects of tuberculosis infection and its management. Clinicians need to be aware of the less common manifestations. In patients with underlying chronic liver disease, the risk of hepatotoxic effects of treatment is higher and such patients need to be closely monitored.

REFERENCES