A CASE REPORT ILLUSTRATING CHALLENGES IN DIAGNOSING PULMONARY TULARAEMIA

A 70-year-old male presented with 6 weeks of fever, chills and a dry cough. He had lost his appetite and 10 kg of weight. He was treated for hypertension, but was otherwise a healthy, former smoker. His blood work showed a moderately elevated CRP of 38 mg/L (reference <5 mg/L) and an elevated sediment reaction of 54 mm/h (reference 2-10 mm/h). The physical examination was normal. A chest X-ray showed a cavitary nodule of 2.8 cm in the right lower lobe. A subsequent chest computer tomography (CT) revealed three bilateral cavitary nodules and hilar and mediastinal lymphadenopathy with necrosis (Figure 4). The radiological findings were described as suspicious of lung cancer, and the patient was referred to a fast-track cancer pathway in secondary care.

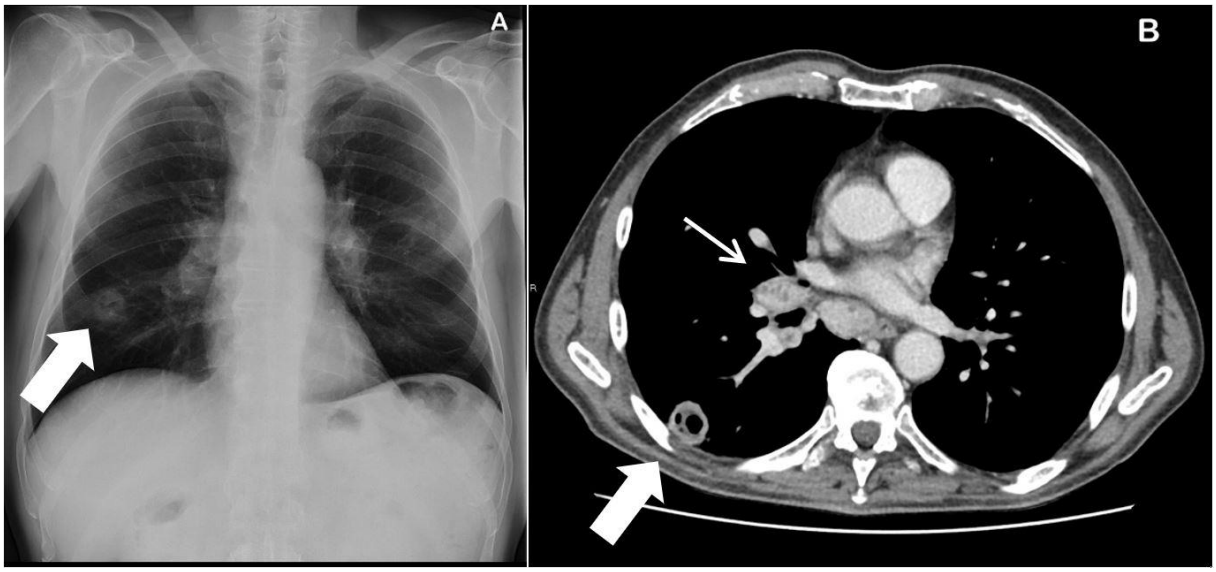

Figure 4: A) Chest X-ray showing a cavitary nodule (wide arrow) in the right lower lobe B) Axial CT image showing mediastinal and hilar lymph adenopathy with necrosis (narrow arrow) and a cavitary nodule in the right lower lobe (wide arrow).

A detailed medical history revealed that his mother received treatment for tuberculosis 20 years ago. He was a retired gardener living in the countryside. He had been chopping wood during the last few months and had a private well. We primarily suspected lung cancer or tuberculosis.

Polymerase chain reaction (PCR) of induced sputum turned out negative for Mycobacterium tuberculosis. Bronchoscopy revealed no endobronchial pathology. Cytology of bronchioalveolar lavage (BAL) did not identify any atypical cells. Cytology of endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA) of enlarged mediastinal and hilar lymph nodes revealed necrosis and granulomas (Figure 5).

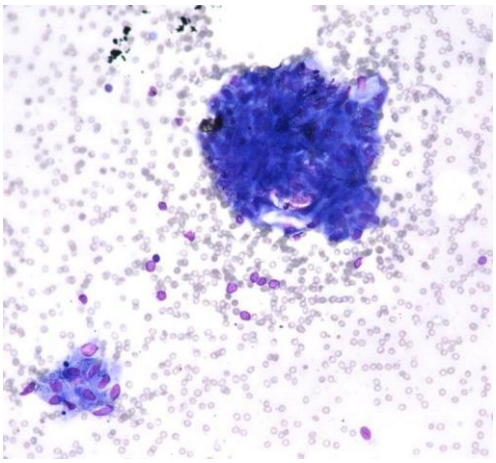

Figure 5: Cytology of aspiration of mediastinal lymph node, MGG (May-Grünwald Giemsa)-stained:
A large granuloma with epithelioid cells to the right and a small granuloma to the left.

Culture and PCR for Mycobacterium tuberculosis of the EBUS-TBNA samples turned out negative. We refrained from doing a CT-guided biopsy, as we could not rule out a pulmonary abscess. The combination of pulmonary cavities, necrosis and granulomas made us consider tuberculosis as the most likely differential diagnosis. Pulmonary tularemia seemed less likely, as this was believed to be a rare condition. Still, a serological test was ordered and came back positive:

S- Francisella tularensis agglutination: 1048
S- Francisella tularensis Immunoglobulin M: positive
S-Francisella tularensis Immunoglobulin G: positive

PCR of EBUS aspirate from the mediastinal and hilar lymph nodes turned out to be positive for Francisella tularensis.

Based on the above, the patient was diagnosed with pulmonary tularaemia. He received treatment with Cipofloxacin for three weeks and made a full radiological and clinical recovery.

IN SUMMARY

The present case demonstrates typical challenges in diagnosing pulmonary tularaemia. The patient presented with symptoms both consistent with an infection and malignancy, and the radiological findings were described as suspicious of lung cancer. Serology is an easy way to confirm tularaemia. The challenge lies in considering pulmonary tularemia as a differential diagnosis at an early stage in patients living in endemic areas, having risk exposure of tularaemia and presenting with symptoms of infection. With clinical suspicion of tularemia, we find it prudent to wait for the serological results to avoid unnecessary and expensive investigations. The serological antibody response to tularaemia is delayed, often until 2-4 weeks after onset of symptoms. We thus recommend repeating the serological test if faced with a negative initial test. In these cases, the degree of clinical suspicion of pulmonary tularaemia should determine whether it is still prudent to wait for the serology or to order further investigations.