DR MATTHEW PIZZUTO, DR DANIEL CILIA, PROF. ROBERT SCIBERRAS

Lost to Follow-Up: A Challenging Case of Tuberculosis

ABSTRACT

We present a case of a 27-year-old Sudanese male who, on presentation for alcohol intoxication and a lacerated wound over his left lower limb, was found to have an incidental opacity in his left lung which was further characterized by a computed tomography (CT) scan. Testing on a bronchoalveolar lavage sample revealed *Mycobacterium tuberculosis*. After an uneventful admission, the patient's management plan faced issues with compliance, as the patient was expelled from his temporary social housing arrangement and failed to attend his follow up clinics.

Key Words: Tuberculosis, Multidrug Resistance, Direct Observed Therapy.

INTRODUCTION

Despite being a curable and preventable disease, Tuberculosis (TB) continues to have a significant burden in terms of morbidity, mortality and cost. The incidence across the different continents ranges from 26 to 226 cases per 100,000.[1] Direct Observed Therapy (DOT) is a strategy currently endorsed by the World Health Organisation and has five elements:

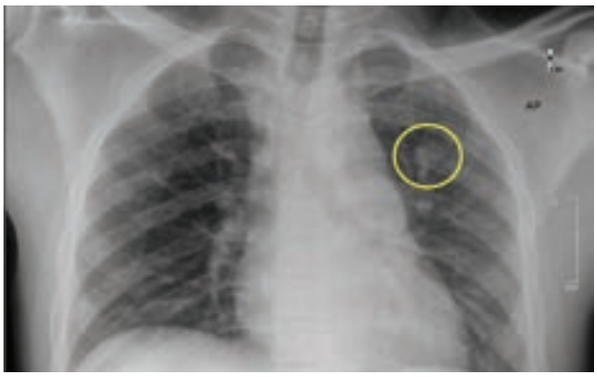
- Political commitment
- Microscopy services
- Drug Supplies
- Surveillance and monitoring systems
- Direct observation of treatment.

DOT aims to achieve two main goals, ensuring that a patient completes his therapy to cure and decreasing multidrug resistance in the community.[2]

CASE PRESENTATION

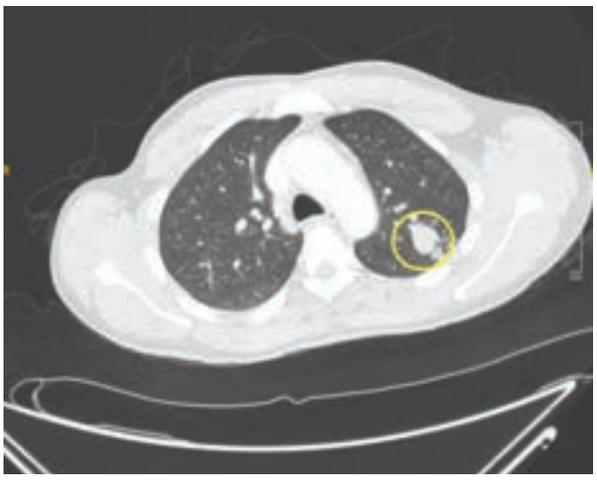
A 27-year-old Sudanese male was brought to the Emergency Department at Gozo General Hospital in view of alcohol intoxication and a lacerated wound over his left calf. The patient was unable to recall the events that occurred leading up to his presentation. Radiographs of the left lower limb confirmed a fracture of the middle portion of the left tibia. As the patient was a heavy smoker and worked as a plasterer, a chest radiograph was taken as part of the pre-operative assessment for intramedullary nailing of the fracture. This revealed a two centimetre round opacity in the middle zone of the left lung field (Figure 1).

Figure 1. Chest radiograph showing a two centimetre opacity in the middle zone of the left lung field



In view of the Chest X-Ray findings, a CT scan of the thorax was performed which showed an 18 millimetre by 16 millimetre low-intermediate density, tubular nodule in the apical segment of left upper lung (Figure 2). This was associated with a nine millimetre prominent lymph node in the aortopulmonary window.

Figure 2. A CT scan of the thorax showing a nodule in the apical segment of the left upper lung.



Efforts to retrieve his medical history since he came to Malta, four years prior to his admission, did not yield any relevant results, with no previous chest X-Rays, and only a few blood investigations taken the previous year for an intoxication episode.

Routine bloods were taken during this admission. Both HIV and a Hepatitis screen were negative, with no recorded elevations in CRP. The Liver Function Tests (LFTs) were normal except a marginally high gamma-glutamyl transferase (GGT), probably due to chronic alcohol use. All other routine blood investigations were otherwise unremarkable.

The patient underwent left tibia intramedullary nailing of the fracture and was discharged a few days later and an appointment was made for a bronchoscopy, which was carried out two weeks later. Bronchoalveolar lavage and bronchial brushings samples were taken and further investigated.

Microscopy of the samples revealed no abnormalities, however three weeks later, liquid culture revealed acid-fast bacilli which were confirmed to be *Mycobacterium tuberculosis*. The patient was traced and informed. He was then admitted to an isolation room for treatment. The patient's details were passed to the Public Health Department for disease notification purposes and contact tracing. The patient was found to be stable, with no complaints, and started on the following medications:

- Rifampicin 600mg daily
- Pyrazinamide 2g daily
- Ethambutol 1g daily
- Pyridoxine 10mg daily

The patient's admission was uneventful and after the 14th day, he wished to be discharged against medical advice. The case was discussed with Infection Control who informed the medical team that since 14 days of quarantine had elapsed, it was safe for the patient to exit quarantine. The details of the patient were forwarded to Public Health for follow-up and the patient was discharged to the community.

The patient failed to attend his medical outpatients and respiratory outpatients appointments, only to return to the Emergency Department a few weeks later after being referred from a health centre. The patient had been expelled from his temporary social housing arrangement soon after discharge in view of a recurrent intoxication issue and ended up without a permanent residence. The patient stopped his anti-tuberculous medication soon after being expelled. This case was re-discussed with Public Health, who informed that the patient should be readmitted and restarted on the same anti-tuberculous medications as previous.

During his second admission, together with the social workers, discharge liaison nurse and members from the public health team, a temporary social housing arrangement in Malta was found for the patient. This is important since the patient would have a residence where he could sleep and eat, as well as have DOT carried out, as part of the management plan of TB. This will help prevent of the development of Multidrug-Resistant Tuberculosis (MDR-TB).

DISCUSSION

Incidence and Aetiology

TB is an infectious bacterial disease caused by *Mycobacterium tuberculosis* affecting an estimated 9.9 million persons in 2020, of which 1.49 million died.[3] The infection is transmitted between humans via the respiratory route as an aerosol.[4] Approx. 10% of infected individuals progress to active TB infection during their lifetime, while the remainder successfully contain their infection, with the pathogen remaining in a latent state for many years in a significant proportion of these patients. This carries the risk of reactivation and disease.[5]

Treatment and Multidrug-Resistant Tuberculosis

The treatment of TB requires the use of multiple drugs for many months, which presents itself with a challenge, especially in cases such as the one presented here, where communication barriers and the lack of a permanent residence were present. The importance of this regime is of utmost importance, as failure in compliance may result in the development of MDR-TB, which requires longer treatment regimens consisting of medications which are more expensive and have more significant adverse reaction profiles.[5]

MDR-TB is TB that is resistant to at least both rifampicin and isoniazid, and accounts for 4.7% of all persons infected with TB, 3.3% of persons who are newly diagnosed with TB and for 18% of persons who were previously treated for TB.[1]

CONCLUSION

As demonstrated by our case, infection with TB and the risk of the development of MDR-TB is a reality, even locally. We wish to highlight the importance of a multi-disciplinary approach to DOT and regular follow-up as part of the management of TB.

REFERENCES

1. Fukunaga R, Glaziou P, Harris JB, et al. Epidemiology of Tuberculosis and Progress Toward Meeting Global Targets - Worldwide, 2019. *MMWR Morb Mortal Wkly Rep* 2021;70(12):427-430.
2. Davies PD. The role of DOTS in tuberculosis treatment and control. *Am J Respir Med* 2003;2(3):203-209.
3. Chakaya J, Petersen E, Nantanda R, et al. The WHO Global Tuberculosis 2021 Report - not so good news and turning the tide back to end TB. *Int J Infect Dis* 2022;124 Suppl 1:S26-S29.
4. Patterson B, Wood R. Is cough really necessary for TB transmission? *Tuberculosis (Edinb)* 2019;117:31-35.
5. Bloom BR, Atun R, Cohen T, et al. Tuberculosis. In: Holmes KK, Bertozzi S, Bloom BR, Jha P, editors. Major Infectious Diseases. 3rd ed. Washington (DC): The International Bank for Reconstruction and Development / The World Bank; 2017. Chapter 11.