CASE REPORT

Disseminated tuberculosis following liver transplant presenting with an axillary abscess

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SUMMARY

Four years after an orthotopic liver transplant for hepatocellular carcinoma secondary to alcoholic liver disease, the patient presented in a crescendo manner with skin infections and finally a septic right arm wound. The abscess was drained and cultures grew *Mycobacterium tuberculosis*. The patient reported a previous episode of 'pneumonia' and subsequent hospitalisations for recurrent chest infections, and following further investigation, he was diagnosed with disseminated tuberculosis. The infection responded to triple therapy, but primary closure of the arm wound was unsuccessful and it was treated conservatively with negative pressure wound therapy. The patient remains an inpatient 3 months after his presentation, responding well to therapy and anticipating imminent discharge. The patient's case serves as a reminder that infections are common in solid organ transplant recipients and clinicians should be aware of unusual or recurrent presentations in these patients, to allow for early diagnosis and timely management.

BACKGROUND

Given the success of immunosuppressive regimes in managing acute rejections in solid organ transplant (SOT) patients, the long-term complications associated with these medications, including renal and cardiovascular disease, malignancy and infections, are becoming increasingly significant. Transplant patients can expect, on average, a reduction of 7 years' life expectancy, when compared with age-matched and sex-matched controls¹; thus, it is important to try and minimise post-transplant morbidity and mortality to ensure maximal outcomes.

Tuberculosis (TB) is well known for its varied style of presentation. The risk of active infection in a SOT recipient has been estimated at 20–70 times greater than in the general population.² While ultimately the numbers affected will be small, the increased incidence and pathological effects of the infection within this group make it an important diagnosis to make. The diagnostic challenge is compounded by often atypical presentations—more often extrapulmonary or disseminated.³ Effective treatment may be problematic due to the hepatotoxic nature of many of the drugs and interactions with the immunosuppressants.

CASE PRESENTATION

The patient is a 70-year-old man who underwent an orthotopic liver transplant 4 years ago for hepatocellular carcinoma secondary to alcoholic liver impairment. He reports an alcohol intake of

around 60 units a week throughout his working life. His drinking never caused any social problems, largely reflected his stressful job and he successfully adhered to the strict 6 month abstinence demanded of him prior to the procedure.

Initially, the patient's new liver functioned well and his general health was good. However, in 2012, while on holiday in Menorca, he was hospitalised with pneumonia and subsequently repatriated to the UK. On further detailed history taking he reported long-standing winter coughs and colds, previous asbestos contact but no TB exposure.

The patient recuperated slowly. However, in June 2013, he was hospitalised several times with recurrent chest infections—multiple episodes of productive cough, with equivocal chest radiographs, treated with antibiotics—and a month later developed an axillary collection initially thought to be secondary to paronychia. He received multiple courses of oral and intravenous antibiotics and underwent one incision and drainage procedure. In early September, he presented with a septic wound overlying the biceps on the medial aspect of the right arm. It was felt to be unrelated to the axillary collection or the previous procedure and he was taken immediately for abscess excision. However, on exploration, the infection was found to track along the length of the biceps, into the superficial shoulder (not into the joint), and extend to the chest wall. Postoperatively, the patient required ventilation and vasopressor support on the intensive care unit (ICU).

During his 5-day stay in the ICU, a CT chest scan revealed miliary nodular changes consistent with a presentation of pulmonary TB and bronchoalveolar lavage revealed *Mycobacterium tuberculosis*, while results of pus that drained from the abscess tested positive for *M tuberculosis*, *Enterococcus faecalis* and herpes simplex virus 1. He was started on ethambutol, isoniazid and rifampicin (avoiding the pyrazinamide to minimise the risk of hepatitis) and meropenem (to treat the *E faecalis*), his immunosuppressants were stopped and further imaging revealed splenic abscesses, supporting a diagnosis of disseminated TB.

Two weeks later, the patient remained very unwell, with an open 15 cm right arm wound clearly exposing the biceps and still draining pus despite his antibiotic therapy. Further deep tissue biopsies confirmed the previous microbiology. At this point, he was deemed too high an anaesthetic risk for further surgical procedures and a negative pressure wound therapy (NPWT) dressing was

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applied to his arm wound. Several days later, the wound was looking much healthier. At this point, his immunosuppressants were restarted and rehabilitative input started.

Three weeks later, the NPWT dressing was removed and the wound was allowed to heal by secondary intention. Three months after his initial presentation, the patient remains an inpatient, his wound is healing steadily and he is anticipating an imminent discharge.

INVESTIGATIONS

The patient underwent continuous monitoring of his hepatic function post-transplant, including viraemia screening. Everything was satisfactory. He underwent a chest X-ray (CXR) and CT scan in Menorca following hospitalisation, which confirmed a lobar pneumonia, revealed undiagnosed changes consistent with chronic obstructive pulmonary disease and pulmonary fibrosis, but no evidence of previous or currently active TB infection.

Following the abscess drainage, *M tuberculosis*, *E faecalis* and herpes simplex virus 1 were cultured from the pus and confirmed on deep tissue biopsies. The former was also detected using bronchoalveolar lavage.

A CT scan undertaken in the ICU to investigate the patient's poor postoperative respiratory function showed miliary changes indicative of pulmonary TB and a whole body follow-up scan also demonstrated splenic abscesses.

DIFFERENTIAL DIAGNOSIS

Differential diagnoses would include abscesses due to haematogenous spread from any other infective source and lung diseases consistent with the CT/CXR findings, which would include: fungal diseases (histoplasmosis, coccidioidomycosis and blastomycosis); pneumoconiosis; acute allergic or fibrosing alveolitis; tropical pulmonary eosinophilia; lymphoma or carcinomatosis. However, disseminated TB was felt to be the most likely following the CT scan, suggesting pulmonary disease, and the bronchoalveolar and pus culture results, which revealed the presence of the organism.

TREATMENT

Incision and drainage procedure followed by second abscess drainage.

Triple TB therapy—isoniazid, rifampicin and ethambutol, avoiding pyrazinamide to try and reduce the risk of hepatotoxicity—and a 4-week course of meropenem and acyclovir.

Conservative NPWT treatment.

OUTCOME AND FOLLOW-UP

Three months after diagnosis and initiation of his TB treatment, the patient had responded well to treatment.

His wound was healthy, regranulating after the application of the vacuum dressing, and rehabilitation had greatly improved his deconditioned state. He is anticipating being discharged within the next few weeks and will continue his anti-TB treatment in the community; he will be followed up as an outpatient by the plastic and reconstructive surgery service for further management of his arm wound and the infectious diseases team to ensure effective treatment of his TB.

DISCUSSION

In one case series that comprised a 10-year follow-up of more than 2000 SOT recipients, 0.9% of them (1% of liver transplants) developed TB, in which 39% was disseminated at presentation. The mean delay to diagnosis was 30 days—significantly shorter

than in the patient's case, which took at least 3 months and may even have been longer. While most patients responded to therapy determined by the local protocols at their treatment centres, 39% developed hepatotoxicity resulting in a mortality while on treatment of 17%.⁴

Given the difficulties regarding the diagnosis and management of TB in SOT recipients, diagnosis of latent TB or identification of exposure prior to transplantation is very important. While the tuberculin skin test (TST) may have reduced sensitivity in end-stage liver failure patients, a systematic review of 139 active TB cases in SOT recipients revealed that 37% had a positive TST, 23% had abnormal chest imaging and 13% had a history of untreated/improperly treated TB,⁵ suggesting that diagnosis of latent TB may be possible for many pretransplantations. Despite the recommendation that all transplant candidates (and donors) should be evaluated by a TST or Interferon- γ release assay prior to the procedure,⁶ only 40.5–47% of SOT recipients are currently tested,⁷ illustrating that increased emphasis needs to be placed on ensuring that this aspect of the evaluation process is undertaken.

Learning points

- ▶ Long-term complications of immunosuppressive regimes (increased infection, malignancy, renal and cardiovascular disease) are becoming increasingly important in solid organ transplant (SOT) recipients as acute rejections are generally managed effectively.
- ▶ Tuberculosis (TB) has a higher incidence in SOT recipients, frequently displaying an unusual presentation, which is often extrapulmonary or disseminated.
- ▶ Diagnosing and treating TB in SOT recipients is challenging but essential.
- ▶ Increased emphasis needs to be placed on effective pretransplant evaluation of the donor and candidate to diagnose latent TB minimise the risks of developing the infection postoperatively.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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