Central nervous system Nocardia infection in a lymphoma patient: a diagnostic challenge resolved by 16s PCR

Introduction

Central nervous system mass lesions in immunocompromised patients are a diagnostic challenge. Infection with the aerobic actinomycete Nocardia is a relatively rare but important cause that can mimic tumours or other mass lesions. Diagnosis requires a high clinical suspicion and is often difficult without biopsy material. Treatment options are limited, particularly for cephalosporin-resistant species such as Nocardia farcinica or in patients who develop side effects to established treatments such as co-trimoxazole hence establishing the species responsible can help guide management, even in the absence of sensitivity testing.

Case presentation

A 74-year-old lady with an aortic valve replacement in 2009 for degenerative valve disease was diagnosed with follicular lymphoma having presented in 2015 with lymphopenopauny and lung nodules. She underwent chemotherapy achieving complete remission in early 2016 and had been on rituximab maintenance for 10 months when she presented with diplopia, headache, confusion and hyponatraemia.

MRI showed a parietal mass lesion and she was started empirically on meropenem and vancomycin plus dexamethasone.

An open biopsy was performed and a small amount of yellowish pus-like fluid was aspirated. CSF and biopsy material were negative for organisms involving abscess formation at the cranio-cervical junction and widespread enhancement of upper spinal cord.

Histology results suggested infection and not lymphoma recurrence. Blood cultures and echocardiogram looking for vegetations were negative. Cryptococcal antigen, toxoplasma PCR and viral screen including polyoma and HHV8 were negative.

She received 8 weeks of meropenem and linezolid and on completion she was converted to a combination of oral minocycline 200mg BD and trimoxazole. Pancytopenia had been complicated by a further recurrence of pancytopenia and a mild elevation of ALT which is possibly linked to minocycline use at the dose given. This has prevented the use of linezolid.

Outcome

Following an improvement clinically and radiologically with further imipenem therapy, she was converted to a combination of oral minocycline 200mg BD and moxifloxacin 400mg OD with a plan for 1 year of treatment in total. This has been complicated by a further recurrence of pancytopenia and a mild elevation of ALT which is possibly linked to minocycline use at the dose given.

Conclusion

Nocardia can cause CNS mass lesions in immunocompromised patients and biopsy should be considered in all cases of uncertainty.

16s PCR can be helpful if routine recovery methods are negative; species-level identification can guide treatment.

Treatment with co-trimoxazole remains prone to serious side effects, with alternative oral options being limited in patients with cytopenia.

Empirical therapy for brain infection may treat Nocardia, but cure requires prolonged therapy.

References


Figure 1: MRI appearances at presentation in January 2017

Figure 2: Recurrence of infection with abscess at cranio-cervical junction and widespread enhancement of upper spinal cord

Figure 3: Improved MRI appearances in August 2017 following prolonged IV imipenem therapy

Diagnosis

PCR of the 16s ribosomal RNA genes was however positive for Nocardia, with sequence homology suggesting N. farcinica and N. kroppenstedtii species.