Reviewer's report

Title: Severe course of Lyme neuroborreliosis in an HIV-1 positive patient; case report and review of the literature.

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Reviewer: John J Halperin

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This interesting case report describes a 51 year old HIV positive woman, on HAART for 6 years, with a minimally depressed CD4 count (501) and an inflammatory brainstem process. She had evidence of intrathecal production of anti-Borrelia burgdorferi antibody, and responded to ceftriaxone therapy. The clinical phenomena are quite interesting. I would consider clarification of the following issues compulsory.

1. Peripheral Lyme serology and Western blot were said to be positive. What was the value of the C6 ELISA and what bands were present on Western blot? How did this compare to the European consensus criteria? Was a Western blot performed on CSF? Were other bands present?

2. Which PCR assay was used for OspA detection and what is that assay’s sensitivity and specificity?

3. The authors refer to this patient as having “chronic LNB”. In the European literature the term “late LNB” is usually defined as 6 months or more of evident disease. This patient’s symptoms were of 3 months duration. I am not aware of a good definition of “chronic LNB” but that term would not seem appropriate here.

4. The patient was treated for 1 month “according to national guidelines”. Although this is common and acceptable practice, current EFNS Guidelines actually recommend 3 weeks.

5. Intrathecal antibody production was not evident on repeat CSF exam. This is actually somewhat surprising – how long after treatment was this follow up LP?

6. The authors repeatedly assert the patient showed little improvement. However at the onset of treatment she was confined to a wheelchair and at follow-up she was ambulatory (cane) with 3-4/5 strength in the lower extremities.

7. The authors attribute the failure to improve to the patient’s immunodeficiency. However, in patients with this type of parenchymal inflammatory brain disease – due to LNB or any other cause - the ability to recover is dictated by the severity of their deficits at the time treatment is initiated. Given that she was wheelchair-confined, the expectation for recovery would be limited, regardless of her immune status or the cause of the brain inflammation. Since this patient was minimally immunocompromised I would consider this assertion unproven.

Level of interest: An article whose findings are important to those with closely
related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests