Reviewer’s report

Title: Clinical prediction and diagnosis of neurosyphilis in HIV-negative patients: a case-control study

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Reviewer: Tian-Ci Yang

Reviewer's report:

This study aimed to explore the factors associated with the clinical diagnosis of neurosyphilis and assess their accuracy for the diagnosis of neurosyphilis. The authors found that CSF TPPA could potentially be considered as an alternative test for diagnosis of neurosyphilis. Combining with neurological symptoms, CSF protein, CSF WBC, the diagnosis would have a higher sensitivity. The work is well presented and I only have minor comments.

1. The diagnosis of neurosyphilis must be based on the results of lumbar puncture. In line 139, the results of laboratory tests were collected within 90 days before or after the lumbar puncture. If a patient underwent multiple syphilitic serological tests during this long time range, which result would be selected into analysis?

2. How were titer data processed in logistic regression analysis? It should be stated clearly in the statistical analysis section. Besides, in line 214-217, when the CSF TPPA titer, CSF protein, and CSF WBC increased one common unit, patients were 1.004, 1.005, and 1.120-fold more likely to be diagnosed as neurosyphilis. These ORs had statistical significance while the clinical value was little. Why not transform the CSF TPPA titer, CSF protein, and CSF WBC into categorical variables by cutoffs into logistic regression analysis?

3. In line 238, when neurological symptoms, CSF protein, and CSF WBC were combined, the sensitivity and specificity were 92.00% and 33.30%, respectively. It should be described in detail how the sensitivity and specificity be calculated in a combination.

4. In table 1, the meaning of the data in brackets should be described in headings.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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