Reviewer’s report

Title: Intracranial actinomycosis of odontogenic origin masquerading as auto-immune orbital myositis: a fatal case and review of the literature

Version: 0 Date: 30 Jun 2019

Reviewer: Hannamari Välimaa

Reviewer's report:

The authors present a very interesting case on an intracranial infection complication of likely odontogenic origin.

General comments:
As I understood the manuscript, the microbiological diagnosis is based on the histopathological findings typical for actinomycosis only, or have I understood this wrong? The authors write on several occasions that 16S rRNA PCR was positive but it is not defined what they mean by this. Positive for a certain Actinomyces species? If it is not yet done, the manuscript would benefit of microbiological verification of actinomycosis diagnosis, for example, by having 16S rRNA sequencing done from the formalin embedded autopsy sample with typical histopathological findings. The Discussion could be condensed a bit.

Detailed comments:
1. Lines 58-59. It is mostly only the periodontal infections that drain through the gingival area. Periapical dental pathoses usually develop because of the root canal infection. In these cases, chronic forms are rather asymptomatic, still usually bone resorption can be seen around the apex of the tooth. Acute periapical infections on the other hand cause abscess formation and infection can spread to medullary bone and perforate the cortical bone and thereafter spread into submucous or subcutaneous tissues and possibly drain through these, but typically not via gingival area. So please correct the first sentence as most odontogenic abscesses do not resolve by spontaneous drainage through the gingival tissues. The authors could simply state that most odontologic infections are self-limiting and localized (as opposed to the rare cases of dissemination).
2. Line 63 and line 145. Please update the bacterial classification.
3. Throughout the manuscript: The first letter of antibiotics should not be capitalized.
4. Line 86. Please specify: Borrelia type tested. Borrelia burgdorferi? Instead of writing lues, I suggest writing which antibodies were tested for Treponema pallidum.
5. Line 109. "Doubtful lesion" suggesting what?
6. Line 111. Cerebro?
7. Line 112. Which species of staphylococci? Coagulase negative? I assume not Staph. aureus. Please specify. Was the finding considered to be a contamination?
8. Lines 114-115. What were the signs of acute inflammation? No micro-organisms were detected.
How was the microbiological diagnostics done at this stage?
9. Line 118. What was the CSF finding suggestive of tuberculous meningitis? Was this based only on inflammatory findings in the CSF or was for example TB PCR or serology done from CSF?
10. Lines 124-125. Was PCR for Mycobacterium tuberculosis done from both the CSF and sputum?
11. Lines 125-126. What was the sample type for bacterial, mycobacterial and fungal cultures?
12. Line 126-127. How was toxoplasmosis and lymphoma ruled out?
13. Line 130-131. Was no sequencing done? From which sample type the 16S rRNA was positive?
14. Line 134. Why was there no 16S rRNA PCR and sequencing done from the sample with typical findings?
15. Line 148. Not all Actinomyces species are strict anaerobes. Some of them are microaerophilic. Please add this.
16. Line 156. Nerve > nervous
17. Line 208. Please clarify BSE and add to the list of abbreviations. Could not find it.
18. Line 230. Please clarify what does it mean that 16S rRNA PCR was positive? Sample type? See also above.
19. Line 253. Tetracyclines should rather be mentioned as a reasonable alternative because there is less resistance for it. See also reference number 27.
20. Because there were a great many tests done, a table summing up the tests done would be useful for the reader. Some of my above suggestions for changes could be clarified in the table as well and then there would not be need for opening e.g. different serological tests in the text itself.
21. Figure text 4. Add sample type/location where was taken.
22. Figure text 5. Please add appropriate letters indicating each finding and figure as you have done through a-c. Currently it is a bit unclear.

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

No

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

Unable to assess

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

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript
Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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