Reviewer’s report

Title: Streptococcal toxic shock syndrome caused by the dissemination of an invasive emm3/ST15 strain of Streptococcus pyogenes

Version: 0 Date: 04 Oct 2017

Reviewer: Claire Turner

Reviewer's report:

The authors have described a severe case of S. pyogenes infection caused by a genotype emm3 ST15 isolate. I think this is an interesting case report demonstrating the severity of disease that this genotype can cause. I do have a few minor comments that I feel need to be addressed.

1. I am not sure I agree with the reference that emm3/ST15 is the iGAS strain. I think certainly emm3/ST15 has the potential to cause iGAS but also causes non-invasive infections as well (as shown in your Figure 2). I think the title of the manuscript should be changed from 'the invasive emm3/ST15 strain' to 'an invasive emm3/ST15 strain' as that is what is being described in the paper.

2. Relating to my first point, the first line in the discussion is misleading. I think this needs to be changed from 'is known to be' to 'has the potential to be'. Not all isolates of emm3/ST15 have high capsule production - does KS030 have a mucoid morphology? High levels of capsule production in emm3 strains are often related to mutations in the regulatory system CovRS or rocA. Do the authors know if KS030 carries mutations in these regulators?

3. The last line of the discussion - again I am not sure you can define emm3/ST15 as an iGAS strain. It is the global dissemination of emm3/ST15 with the potential to cause invasive disease.

4. Lines 98- When the authors refer to 'all known GAS strains' do they mean all emm3 GAS strains that have been genome sequenced?

5. Line 99- Can the authors please clarify what they mean by the core genome of MLST? I don't quite understand how the genomic comparison and extraction of SNVs has been performed here.

6. Figure 2 - Can the authors please provide more information here as to the source of the isolates included in the phylogenetic tree? There are no references to any publications.

7. Line 72 - was this fever in the brother associated with pharyngitis?
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?
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Yes

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