Reviewer's report

Title: A case of Mycobacterium goodii prosthetic valve endocarditis in a non-immunocompromised patient: use of the 16S rDNA technique for rapid diagnosis

Version: 2 Date: 15 March 2012

Reviewer: Jakko van Ingen

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Dr. Jonsson and colleagues present an interesting case of a very rare condition, nontuberculous mycobacterial (NTM) endocarditis. The causative organism, M. goodii, has not been previously associated with endocarditis, at least not in published reports. Although the case of interest, the authors seem to have limited experience in NTM disease, as the manuscript contains many factual errors and NTM and associated diseases.

Major Compulsory Revisions

#1 Background, line 3-6. The authors seems to ignore here that the slowly growing NTM are the most important / frequent causative agents of human disease (M. avium complex, M. kansasii, M. marinum, etc etc). If the plan was only to discuss rapid growers, please state so explicitly and provide readers with an overview of the genus (slow vs rapid growers, etc).

#2 In all aspects of treatment and treatment changes, rationales are missing. Why were regimens chosen and has were changes related to new clinical or laboratory findings?

#3 Antibiotic susceptibility testing of NTM is a science (or artform, if you wish) in itself. Yet, the authors do not report which methods they have used to measure MICs. This is very important information to understand MICs and treatment decisions. Was the CLSI-recommended broth microdilution in cation-adjusted Mueller-Hinton medium with OADC supplement used?

#4 Did the clinician consult the American Thoracic Society guidelines for treatment of NTM disease (Griffith DE et al., Am J Respir Crit Care Med, 2007)?

#5 Conclusion section, line 2 "is grouped"? What is meant here? The species mentioned are all rapid growers; interestingly, lines 3-4 mention that growth can be observed after 7 days of incubation. The definition of rapidly growing NTM is that they grow in less than 7 days. If taking >7 days, the species is considered a slow grower.

#6 Conclusion, line 7. There is no official gold standard for NTM identification and many rapid growers are now decrcribed based on rpoB sequencing (see the works by Adekambi T et al.). The reference given (nr 8) is not about identification at all, it is a review of M. abscessus infections.

#7 Drug susceptibility. The section on drug susceptibility in the conclusion needs
significant revision. The statement that the M. smegmatis group is distinguished from other NTM by its inducible (erm gene) macrolide resistance is incorrect as the entire M. fortuitum complex and M. abscessus have similar erm genes with similar functions... and in fact, M. tuberculosis also has such an erm gene. In line with this, the statement that macrolides are cornerstones of all treatment regimens is incorrect too, as they are not used in M. fortuitum complex infections, because of the inducible resistance.

#8 An issue that the authors fail to discuss is that the susceptibility breakpoints for the tested drugs mostly lack any kind of clinical validation. The breakpoints come from testing series of isolates or studies of strains with mutations known to confer resistance to the drug to be tested. Very few of the breakpoints have been validated in clinical trials.

#9 The statement on tigecycline is rather grandiose and definitely incorrect. Tigecycline is used a lot in infections by M. abscessus, a common pathogen of Cystic Fibrosis patients and other patients with chronic lung diseases. It has been reported on quite a lot.

#10 In summary... increasingly recognized as a human pathogen? There is no data to support this statement. Moreover, the importance of rapid testing for NTM is emphasized, even though in the patient presented no mycobacterium specific methods were used (there are specific blood culture systems for mycobacteria, for example). It may be fair to make note of this.

Minor Essential Revisions

#1 In the second paragraph of the conclusion, the authors claim that >65 species of NTM exist. This is true, but the number of validly published species is really >135.

#2 Reference 20 misses some authors, it seems

#3 Check for consistency in using "nontuberculuous mycobacteria" and "atypical mycobacteria"

#4 Gram stain: intermittent staining? Does this concern the Gram stain? Were subsequent specific stains tried, e.g. Ziehl-Neelsen or auramine-rhodamine?

#5 The term chest radiograph is preferable over chest X-ray which is medical slang

#6 betamethasone? Was dexamethosone meant in paragrph 3 of the case presentation?

#7 Background", last words: "otherwise healthy patient". Given the long case presentation with eventually a prosthetic valve placement, otherwise healthy is a somewhat strong statement.

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

Quality of written English: Acceptable
**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