Reviewer’s report

**Title:** Natural history of Mycobacterium fortuitum pulmonary infection presenting with migratory infiltrates: A case report with microbiological analysis

**Version:** 0  **Date:** 22 Sep 2017

**Reviewer:** David Griffith

**Reviewer's report:**

Comment #1: The association of M. fortuitum lung infection with gastroesophageal disorders associated with chronic vomiting is not new (ARRD 1993, 147; 1271). While not a virulent respiratory pathogen in most circumstances, and appropriately viewed with skepticism as clinically significant and usually not requiring therapy in most circumstances, it would be expected that M. fortuitum would be viewed as more likely clinically significant in a patient such as the one described in this report.

Comment #2: In the case presentation, the authors note that the patient was treated with rifampicin, ethambutol, clarithromycin and levofloxacin, three years and eight months respectively before the referral. These are interesting antibiotic choices since rifampicin and ethambutol do not have activity against M. fortuitum and clarithromycin is ineffective because M. fortuitum has an active inducible macrolide resistance gene (erm gene) leaving only levofloxacin with expected activity against M. fortuitum. It is not surprising there was not resolution of M fortuitum disease with this regimen. It also raises the possibility of acquired mutational levaquin resistance. The authors should include the in vitro drug susceptibility results from the M fortuitum isolates.

Comment #3: The authors do not detail the patient's therapy for GERD and aspiration. He apparently developed aspiration pneumonia 38 months after referral but no other symptoms are reported. It is important to know what interventions were made with regard to his GERD and recurrent aspiration, when they were made and if there was any indication of response to those measures.

Comment #4: The major question I have about the radiographic findings in this study is how can the authors be sure that the migratory infiltrates were not due to recurrent aspiration events. The patient's sputum was AFB culture positive for M. fortuitum on several occasions, however the patient had 4 invasive diagnostic efforts (3 TBLB, 1 FNA) none of which were AFB culture positive. The authors note that "treatment [for M. fortuitum] resulted in clinical improvement, and pulmonary lesions had improved" but as noted in comment #3, there is no mention of treatment for his chronic GERD and aspiration.
Comment #5: The significance of the positive M. fortuitum intestinal fluid culture is not clear. The authors suggest that the fluid could have been the source of the respiratory M. fortuitum isolates. It seems at least as likely that the positive intestinal fluid culture was due either to swallowed respiratory secretions containing M. fortuitum or from swallowed material from an environmental source (household water) that was the common source for the respiratory and intestinal M. fortuitum isolates. The common genotypes only point to a common source of the organism, they are not proof of a specific disease pathophysiology.

Comment #6: The second treatment regimen included imipenem for 2 weeks, amikacin for 3 months, and clarithromycin, minocycline and levofloxacin for 5 years. There is a 2 year gap between the radiograph done at 38 months after referral and 5 years after referral. The authors note "pulmonary lesions had improved" during that time, but did he continue to have at least some migratory infiltrates during the 2 years between months 38 and 60? As an aside, it is certainly reasonable that 3 months of amikacin, minocycline and levofloxacin could have been adequate treatment for a pulmonary M. fortuitum infection.

**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.

No

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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

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