Clinical Case Report

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Rapid resolution of reversible bronchiectasis after *Mycoplasma pneumoniae* pneumonia in an adult

A case report

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Abstract

Rationale: Bronchiectasis results when inflammatory and infectious damage to the bronchial and bronchiolar walls leads to a vicious cycle of airway injury. On the basis of the classic characteristic, that is, permanent bronchial dilatation, bronchiectasis is generally considered irreversible in the adult population.

Patient concerns: A 21-year-old woman presented to our hospital with a 9-day history of productive cough and fever.

Diagnosis: Bronchiectasis after *Mycoplasma pneumoniae* pneumonia.

Interventions: The patient was treated with azithromycin for 7 days.

Outcomes: The bronchial dilatation resolved as evidenced by sequential chest high-resolution computed tomography 7 days and 1 month later, respectively.

Lessons: Although complete disappearance is quite rare in adult, this case demonstrated that bronchial dilatation might resolve completely in such a fascinating short period of time if receiving adequate and timely regimens.

Abbreviations: g = gramma, HRCT = high-resolution computed tomography, *M pneumoniae* = *Mycoplasma pneumoniae*, mL = milliliter.

Keywords: computed tomography, mycoplasma pneumoniae pneumonia, reversible bronchiectasis

1. Introduction

Bronchiectasis results when inflammatory and infectious damage to the bronchial and bronchiolar walls leads to a vicious cycle of airway injury.[1] Diagnosis has been greatly facilitated by high-resolution computed tomography (HRCT).[2,3] A few cases of postinfective "reversal of bronchiectasis" have been previously reported.[4–10]

The shortest period of time reported for the reversal of bronchial dilatation in adults was 6 months.[10] We further reported a case of more rapid resolution of reversible bronchial dilatation in an adult patient with bronchiectasis after *Mycoplasma pneumoniae* (*M pneumoniae*) pneumonia as evidenced by sequential chest high-resolution computed tomography 7 days and 1 month later, respectively.

2. Case report

In October 2017, a 21-year-old woman presented to our hospital with a 9-day history of productive cough and fever. There was no history of respiratory disease. A physical examination showed crackles at the right lower lobe and no clubbing of the fingers. A chest radiograph demonstrated ill-defined consolidation in the right lower lung field. Chest HRCT scan (Fig. 1) showed patchy consolidations with cystic and cylindrical bronchiectasis in the right lower lobe. White blood cell count and neutrophils were normal. Hyperresponsive C-reactive protein 55 mg/L. Erythrocyte sedimentation rate 53 mm/1 h. The *mycoplasma* antibody titre rose from 1:320 on admission to >1:1280 by day 5. A diagnosis of bronchiectasis was made, secondary to *M pneumoniae* pneumonia. On admission treatment with azithromycin and a mucus clearance regimen was started. She noted gradual improvement of her symptoms. A HRCT 7 days later (Fig. 2) demonstrated resolution of bronchial dilatation and absorption of the consolidations. She was discharged from hospital after a stay of 1 week. Sequential chest HRCT 1 month later (Fig. 3) showed complete resolution of bronchial dilatation.

3. Ethical approval

The study was approved by our Institutional Review Board. Ethical approval (No. 20170852) from the regulation committee (Ethical Committee of Shenzhen) was granted for the study protocol. Informed written consent was obtained from the patient for publication of this case report and accompanying images.

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QG and HYL are joint first authors.

The authors declare that they have no competing interests.

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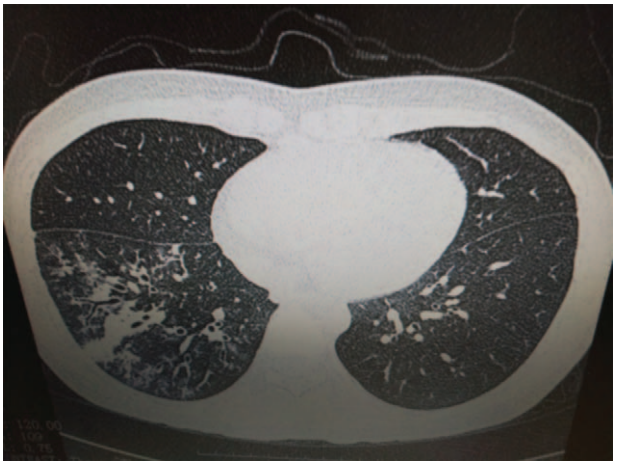

Figure 1. Patchy consolidations with cystic and cylindrical bronchiectasis in the right lower lobe.

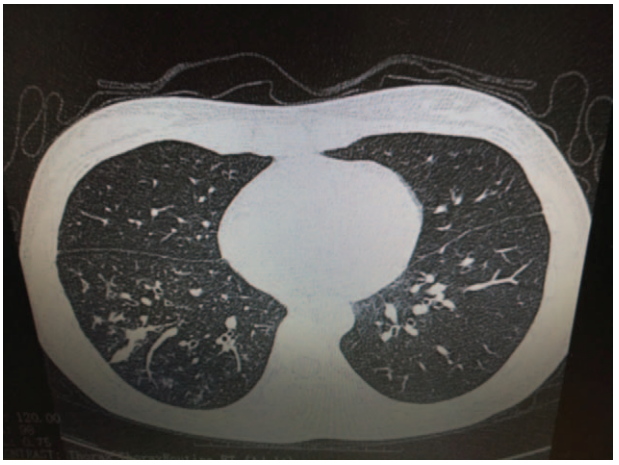

Figure 2. Reversal of cystic and cylindrical bronchiectasis and absorption of the consolidations in the right lower lobe.

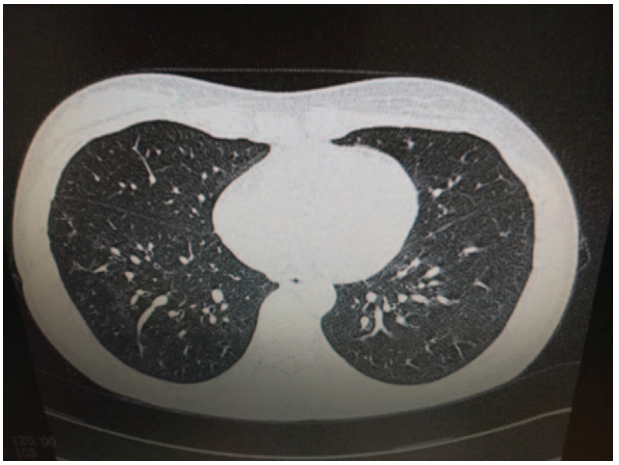

Figure 3. Reversal of cystic and cylindrical bronchiectasis of the right lower lobe.

4. Discussion

Reversible bronchiectasis has been limited largely to the acute and subacute phases of the disease, most often following pneumonia. A case spending such a fascinating short period of time for the reversal has not to our knowledge been the subject of report.

We believe that bronchiectasis developed in this patient as a result of her *M pneumoniae* pneumonia. One could argue its possible existence prior to the acute episode reported in our patient, but normal nutritional status and the absence of a chronic cough, of clubbing of the fingers, or of any history of respiratory disease plead against this possibility. Bronchiectasis was mentioned by Rytel[11] as a possible complication of pneumonia caused by *M pneumoniae*. Four previous reports have implicated *M pneumoniae* in the pathogenesis of bronchiectasis.[9,12–14] Aung et al[9] found that the bronchial dilatation in the patient resolved completely 2 years later. The intriguing short period of time for the complete reversal of bronchial dilatation in the current patient was nearly 7 days.

The exact mechanism of damage following mucosal attachment of *M pneumoniae* is uncertain. Rollins et al[15] observed 6 adult patients with open lung biopsy specimen-proven bronchiolitis due to *M pneumoniae* and found that 5 patients had extensive injury to the respiratory mucosa, loss of cilia and ciliated cells, and fibrosis. Similarly, Zhao et al[16] found that *M pneumoniae*-associated bronchiolitis obliterans developed following acute *M pneumoniae* bronchiolitis in all cases in the study. Impaired mucociliary clearance results in secretion stasis and infection with subsequent increased intrabronchial pressure and eventual bronchial dilatation.

The more appropriate term "pseudobronchiectasis" is used to describe such a radiological phenomenon, because the airway dilatation is temporary with improvement being noted over time, with or without treatment.[17] Pseudobronchiectasis may represent an early stage in the pathogenesis of bronchiectasis[5] and may be a radiological overinterpretation because features of advanced bronchiectasis such as beaded varicose dilations or cystic clusters are usually absent.[17] An overreading of radiological findings was less likely in the current case.

5. Conclusion

Rapid resolution of reversible bronchial dilatation in adult patient with bronchiectasis after *M pneumoniae* pneumonia might occur if receiving adequate and timely regimens.

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Author contributions

Qi Guo and Hai-yan Li made substantial contributions to conception, were in charge of data collection, and wrote the manuscript, and are co-first authors of this article. Qi Guo read the chest radiographs and CT scans.
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Data curation: Qi Guo, Hai-yan Li.
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