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## Correspondence

# *Mycoplasma pneumoniae*-related extra-pulmonary diseases and antimicrobial therapy



### KEYWORDS

Extra-pulmonary diseases;  
Immune-mediated diseases;  
*Mycoplasma pneumoniae*

**Abstract** The findings by Yang-TI et al. suggested that macrolide-resistance and/or delayed appropriate antimicrobial treatment may contribute to the development of *Mycoplasma pneumoniae*-related extra-pulmonary diseases in children. Indeed, these conditions can have variable clinical expression and severity, and may arise in immunologically predisposed children after recurrent/persistent exposure to *Mycoplasma pneumoniae*.

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Dear Editor,

I read with great interest the article by Yang TI et al., suggesting the association between severe/prolonged diseases caused by *Mycoplasma pneumoniae* (*M. pneumoniae*) infections in children and delayed appropriate antimicrobial therapy. As stressed by the authors, this is an important point, considering the recognized burden of *M. pneumoniae* lung infections in children and, importantly, the growing rate of microbial resistance to macrolides, which usually represent the first-line antibiotic treatment in pediatrics.<sup>1</sup> In this regard, I would add the fact that *M. pneumoniae* is known to cause a broad spectrum of upper respiratory infections as well, which manifest as undifferentiated respiratory syndromes and, as a consequence, are often etiologically unrecognized.<sup>2</sup> This aspect may further contribute to delay the appropriate antibiotic treatment of this infection, regardless of the macrolide resistance.

However, this observation arouses some additional comments to complete the interesting discussion carried out by the authors. Indeed, in the results, they considered also the extra-pulmonary diseases associated with *M. pneumoniae* infection, as this microorganism has been recognized for decades as implicated in several and variable immune-mediated clinical manifestations.<sup>3,4</sup>

Interestingly, these extra-pulmonary manifestations resulted to be statistically associated with the infection by macrolide-resistant strains ( $p = 0.002$ ) and the delayed appropriate treatment ( $p = 0.002$ ), respectively.<sup>1</sup> The persistence/recurrence of *M. pneumoniae* infection might contribute to the development of extra-pulmonary manifestations in immunologically predisposed children, although the pathologic mechanisms have to be elucidated yet. In particular, we observed that atopic (not necessarily allergic) children might be more susceptible to develop extra-pulmonary diseases after *M. pneumoniae* infection.<sup>3,5</sup>

The aforementioned findings by Yang-TI et al. are an additional piece of this pathological puzzle, represented by the *M. pneumoniae*-related extra-pulmonary diseases, in which the virulence factors, bacterial persistence, antimicrobial resistance and host immunological characteristics interplay each other variably and in a complex way. Therefore, macrolide-resistance and/or delayed treatment probably matter.

### Conflicts of interest

The author declares no competing interests.

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