

## Rational stepwise approach for *Mycoplasma pneumoniae* Pneumonia in children. Review article (1).

J Microbiol Immunol Infect 2020 Oct 17;S1684 1182(20)30247-4.

**Introduction and Background:** *M. pneumoniae* is an important pathogen of community-acquired pneumonia (CAP) in school-aged children and young adults. Reported incidence world wide is 10-35%.

- Empirical antibiotic choices for CAP, such as beta-lactams are ineffective because *M. pneumoniae* lacks a cell wall.
- Symptoms of *M. pneumoniae* are variable and include fever, cough (dry or productive), sore throat, coryza, and headache.
- It may cause severe respiratory illnesses like bronchiolitis obliterans, pleural effusion, pulmonary embolism, respiratory distress syndrome, bronchiectasis, which is postulated to be due to immune mediated or high bacterial load.

# ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet



## *Mycoplasma pneumoniae* Pneumonia in children

### Summary:

- Macrolides are the first line treatment choice in *Mycoplasma pneumoniae* pneumonia (MPP).
- Macrolide resistance in *M. pneumoniae* is increasingly reported since 2016 especially in countries like China, Japan, Korea and South East Asia, where reported resistance is 60-90%, while it was <30% in America and Europe from 2008 to 2013.
- In macrolide sensitive MPP, fever defervescence occurs within 48 hours of starting the macrolides in 70-88% patients. In contrast, persistence of fever beyond 72 hours strongly points towards macrolide resistance, if other causes excluded.
- Tetracyclines (doxycycline or minocycline) or fluoroquinolones are considered for patients with *M. pneumoniae* not responding to macrolides.
- Refractory MPP is defined as persistent fever and/or deterioration of clinical or radiological findings after administration of the appropriate antibiotic treatment for 7 days or more.
- Patients with refractory MPP have a significantly longer duration of fever, length of hospitalization, and higher incidence of extra-pulmonary complications than those with non-refractory MPP
- Refractory MPP is not found to be always associated with resistant *Mycoplasma* strains. Refractory MPP results from hyperactive immune response and anti-inflammatory drugs like steroids and/or IVIG have a role in treatment.
- Lactate dehydrogenase (LDH) is generally considered to be a reliable biomarker of refractory MPP, with cut off levels of 379-480 IU/L. Other biomarkers include CRP, ESR, IL-10, IL-6, IFN- $\gamma$ , and TNF- $\alpha$

### EXPERT COMMENT

“ Typical bugs like streptococcus pneumoniae, H influenzae continue to remain target of empirical antibiotics in CAP, even in vaccinated children. Atypical organisms like *Mycoplasma pneumoniae* are considered in CAP, especially in school-aged children and adolescents, if no response to beta-lactams/persistent fever/extrapulmonary features present.

**Macrolides (preferably Azithromycin) are first line drug of choice for *Mycoplasma*. Upfront combination therapy with macrolides and beta-lactams in all cases of CAP is not recommended by pediatric pneumonia guidelines.**

**Suspect macrolide resistant *Mycoplasma* if fever persists after 72 hours and other causes are ruled out.** Doxycycline or Fluoroquinolones are second line in *Mycoplasma* infection. For severe or refractory *Mycoplasma* pneumonia anti-inflammatory therapy with steroids and/or IVIG may be tried. A recent meta-analysis indicated that in refractory *Mycoplasma*, adding steroids to azithromycin improved clinical efficacy, shortened hospital stay and improved radiological features (2).”

Dr. Mandeep Walia

Fellowship Pediatric Respiriology (Canada)

Consultant Pediatric Pulmonology

Max Smart Superspeciality Hospital Saket, Delhi & QRG health City, Faridabad

Director- BreatheWell BeWell Clinic, Vasant Kunj, Delhi

With warm regards,

**DR. PIYUSH GUPTA**  
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**DR G.V. BASAVARAJA**  
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IAP PRESIDENT  
2020

### Reference

1. Tsai TA, Tsai CK, Kuo KC, Yu HR. Rational stepwise approach for *Mycoplasma pneumoniae* pneumonia in children. J Microbiol Immunol Infect. 2020 Oct 17;S1684-1182(20)30247-4. doi: 10.1016/j.jmii.2020.10.002.
2. Efficacy and safety of azithromycin combined with glucocorticoid on refractory *Mycoplasma pneumoniae* pneumonia in children: A PRISMA-compliant systematic review and meta-analysis. Qiu JL, Huang L, Shao MY et al. Medicine (Baltimore). 2020 May 29;99(22):e20121.

**DR MANINDER S  
DHALIWAL**