



Clinical characteristics of children infected with macrolide resistant *Mycoplasma pneumoniae* in central Ohio



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Background

- Macrolide resistant *Mycoplasma pneumoniae* (MRMp) has emerged in the last 2 decades worldwide, with reported rates as high as 93% in Asia. Rates in the United States vary from 3.5-13.2%.
- Previous reports have described increased morbidity in patients with MRMp infection, mainly in adults with limited literature in children.

Objective

- To evaluate the clinical characteristics of children infected with MRMp in Central Ohio, and compare them to children infected with Macrolide sensitive *Mycoplasma pneumoniae* (MSMp).

Methods

- Local resistance rate in central Ohio is 1.8% (9 resistant strains identified by sequencing from 477 clinical isolates collected from Oct 2015-Dec 2017).
- Clinical data was available in 7 MRMp infected patients.
- Case-control series (1:3) was performed matching MRMp infected patients by month and year with MSMp infected patients.
- Retrospective analysis of electronic health records was performed to identify clinical and treatment characteristics.
- Continuous variables are shown as medians and inter-quartile ranges (IQR), and categorical variables as percentages.
- For comparisons T, Mann-Whitney U, Fisher's exact and Chi-square tests were used as appropriate.

Results

Table 1. Patient demographics

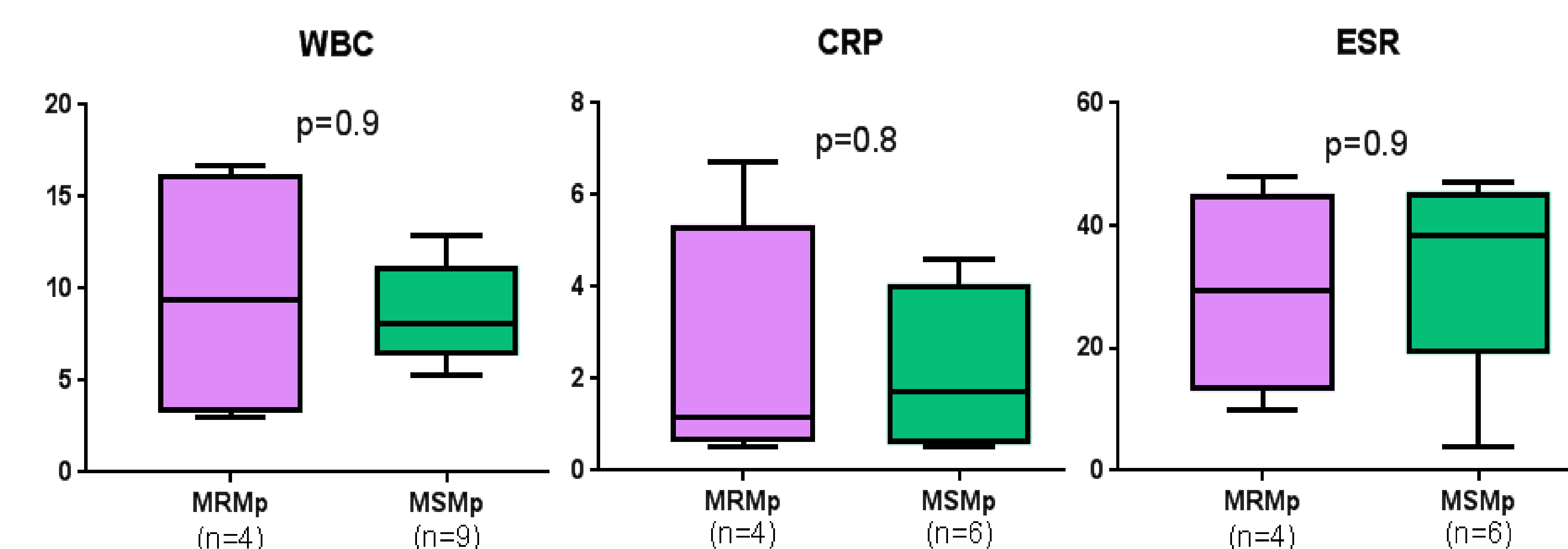
	MRMp (n= 7)	MSMp (n=21)	p value
Age median (IQR)	8.5 (6-17)	8 (3.5-11.5)	0.3
Gender			
female	3 (43%)	13 (62%)	0.4
male	4 (57%)	8 (38%)	
Ethnicity			
Caucasian	5	16	0.4
African American	1	3	
Others	1	1	

Table 2. Clinical characteristics

Clinical Characteristics	MRMp (n= 7)	MSMp (n=21)	p value
Duration of symptoms at presentation -median (IQR)	8 (6-13) days	11 (4-14) days	0.7
Cough	7 (100%)	21 (100%)	>0.99
Fever	7 (100%)	17 (60%)	0.07
TMAX - median (IQR)	103 (103-104.7) F	102 (101-103) F	0.1
Fatigue	3 (43%)	8 (38%)	0.9
Shortness of breath	2 (29%)	5 (24%)	0.9
Sore throat	1 (14%)	2 (10%)	0.9
Rash	1 (14%)	3 (14%)	0.9
Myalgia	1 (14%)	0	0.3
Headache	0	2 (10%)	0.9
Decreased Oral Intake	2 (29%)	9 (43%)	0.6
Nasal Congestion	4 (57%)	16 (76%)	0.4
Vomiting	2 (29%)	3 (14%)	0.6
Auscultation			
Normal	3 (43%)	9 (43%)	0.6
Wheezing	0	3 (14%)	
Crackles or rales	4 (57%)	10 (48%)	
Chest X-ray Findings	n=6	n=18	
Normal	1 (17%)	1 (6%)	0.5
Abnormal	5 (83%)	17 (94%)	
Extra pulmonary	1 (17%)	5 (28%)	
Complications			>0.99
Disease Severity			
Inpatient	4 (57%)	8 (38%)	0.4
Oxygen Requirement	1 (14%)	5 (15%)	>0.99
PICU admission	1 (14%)	0	0.3
Length of stay – median (IQR)	6 (1.25-21.25) days	2 (1-2.75) days	0.3

- 2 MRMp patients had chronic diseases vs. 7 MSMp patients (mostly asthma) ($p>0.99$).
- All patients with MRMp had fever, in comparison to only 60% of MSMp patients, however this difference was not statistically significant.
- No patient required invasive ventilation.
- Only one patient required admission to the PICU. This patient was infected with MRMp, was diagnosed with encephalitis and required close neurological monitoring.

Figure 1. Laboratory values



- 17 patients (6 MRMp, 11 MSMp) had testing for other respiratory pathogens. Viral co-detection was found in 3 of MSMp patients.
 - 1 coronavirus
 - 1 influenza (detected by rapid test)
 - 1 co-detection of RSV and Rhino/enterovirus
- 3 MRMp patients were receiving treatment with azithromycin at time of presentation vs. none in the MSMp group ($p=0.01$).
- 20 patients were initially treated with azithromycin. Only one patient in the MSMp group was treated with Levofloxacin due to recent macrolide exposure, not due clinical concern for resistance.
- Azithromycin was switched to Levofloxacin in 2(12%) of the MRMp patients vs. none in the MSMp group ($p=0.06$). Both were due to clinician suspicion for macrolide resistance.
 - 13 y/o male with complex past medical history who remained febrile while on 48hr of Azithromycin.
 - 17 y/o female who had 10 days of fever and URI symptoms. S/P Augmentin x 7 days and 2 days of Azithromycin prior admission.

Conclusions

- There were no differences in clinical characteristics or disease severity between patients infected with MRMp and MSMp.
- There was a trend for more frequent presence of fever in the MRMp group although this was not statistically significant.
- Clinical suspicion for MRMp infection should arise in patients seeking medical attention while on treatment with azithromycin.