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Title: Therapeutic efficacy of macrolides, minocycline and tosufloxacin against macrolide-resistant *Mycoplasma pneumoniae* pneumonia in pediatric patients

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Body: Background and objective: Since 2000 the prevalence of macrolide-resistant (MR) *Mycoplasma pneumoniae* in pediatric patients has increased in Japan. The purpose of our study was to investigate differences in the clinical course, bacteriological effect and therapeutic efficacy against MR *M. pneumoniae* among macrolides, minocycline and tosufloxacin. Methods: We performed a multicenter prospective epidemiological study of MR *M. pneumoniae* for the first time. A total of 152 children with *M. pneumoniae* pneumonia confirmed by polymerase chain reaction (PCR) were analyzed. A search for mutations at sites 2063, 2064, and 2617 in the *M. pneumoniae* 23S rRNA domain V gene region was performed. Results: One hundred nine patients of 152 children with *M. pneumoniae* pneumonia were determined to have a MR gene. Fever disappeared within 48 hours after antibiotics administration in the MR patients was seen in 25% of the macrolides group, 83% in the minocycline group, and 81% in the tosufloxacin group. The DNA copy numbers in the MR patients showed little decrease after macrolide administration, but rapid decrease after administration of minocycline or tosufloxacin. Conclusions: The number of *M. pneumoniae* in the MR patients decreased promptly after 48 hours' minocycline and tosufloxacin treatment and had a close relationship with clinical outcome. In contrast, we found that the clinical and bacteriological efficacy of macrolides for treating cases of MR patients was low. Our results might indicate that minocycline and tosufloxacin considered as the first choice drugs for treatment of *M. pneumoniae* pneumonia in Japanese situation.