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ORIGINAL PAPER

Mycoplasma pneumoniae Infection in Children: Clinical Features and Outcomes

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ABSTRACT

Introduction: Mycoplasma pneumoniae *(MP) is a major cause of community-acquired respiratory infections, especially in school-aged children and young adults, with cyclical outbreaks occurring every few years.*

Material and methods: *This study analyzed a cohort of pediatric patients treated in a tertiary hospital in Bucharest and compared the findings with data reported in the literature.*

Results: *Elevated anti-MP antibody titers (IgG, IgA and IgM) were associated with increased leukocytosis, neutrophilia, complications and longer hospitalization. Fever, lobar involvement and complications were also linked to prolonged hospital stay.*

Conclusions: *Our findings are consistent with international data and reflect the typical epidemiological profile of MP infection in children. These results contribute to the characterization of MP infection in the post-COVID era and support the need for prospective studies to validate the identified prognostic markers.*

Keywords: pneumonia, children, *Mycoplasma pneumoniae*.

INTRODUCTION

Mycoplasma pneumoniae (MP) is a small cell wall-deficient microorganism and one of the most common etiological agents of community-acquired respiratory infections, particularly in school-age children and young adults. According to Waites and Talkington (1), MP causes waves of increased prevalence at intervals of several years, and the infection typically presents as a mild atypical pneumonia with an interstitial pattern, which is why it has also been referred to as "walking pneumonia". The introduction of conjugate vaccines against *Streptococcus pneumoniae* and

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Haemophilus influenzae type b has significantly altered the epidemiology of community-acquired pneumonia (CAP) in children, which is now predominantly caused by viral pathogens and MP (2, 3). During the COVID-19 pandemic, public health measures, including mask wearing, mobility restrictions and quarantine, led to a significant reduction in MP activity, similar to that observed for other respiratory pathogens (2, 4). Unlike respiratory viruses and *Streptococcus pneumoniae*, which rapidly re-emerged after these measures were relaxed, MP activity remained low until 2023, when China and several European countries began reporting a resurgence of infections (5). In October 2024, the CDC issued an alert regarding an increase in MP infections in the United States, particularly among children (6). The reasons for this delayed and pronounced resurgence have not been fully elucidated. Reduced herd immunity resulting from the prolonged period of low pathogen circulation during the pandemic has been proposed as a possible contributing factor. Data accumulated during the post-COVID period indicate a shift in both the clinical and radiological manifestations of MP infection, characterized by an increased incidence of severe cases, lobar pneumonia and complications such as pleuritis and acute respiratory failure. This evolving profile differs from the classical descriptions of the disease (2, 7, 8).

The diagnosis of MP infection remains challenging in clinical practice, with molecular and serological methods complementing each other despite their respective limitations. Macrolides remain the first-line treatment; however, resistance to this class of antibiotics is increasing worldwide. Macrolide-resistant MP has been documented in East Asia for more than two decades, with resistance rates reaching up to 87% in Japan (2, 8-10), and concerns regarding its spread in Europe are growing. In Romania, data on local macrolide resistance in MP are limited, making it difficult to interpret treatment patterns in relation to the pathogen's regional susceptibility profile (2, 11). ❑

MATERIAL AND METHOD

This retrospective study was conducted at "Marie Curie" Emergency Clinical Hospital for Children in Bucharest between January and December 2025. A total of 57 patients with a confirmed diagnosis of *Mycoplasma pneumoniae* infection were included. Clinical, laboratory and radiological data were extracted from the institution's electronic medical record system.

Inclusion criteria consisted of confirmation of *Mycoplasma pneumoniae* infection by molecular or serological methods in the presence of clinical and paraclinical findings compatible with a respiratory infection. The presence of radiological changes consistent with an acute respiratory infection was a mandatory criterion for study inclusion. The molecular diagnosis was established using the polymerase chain reaction (PCR) method, a molecular biology technique that directly detects bacterial DNA in clinical samples, particularly those obtained from the respiratory tract. Serological diagnosis was established by detecting anti-*Mycoplasma pneumoniae* immunoglobulin M (IgM) antibodies using a chemiluminescent immunoassay. An antibody level of ≥10 AU/mL was considered positive and diagnostically relevant. In addition, anti-*Mycoplasma pneumoniae* immunoglobulin A (IgA) and immunoglobulin G (IgG) levels were measured. Elevated values were defined as those exceeding the upper limit of the age-adjusted laboratory reference range (≥10 AU/mL).

Exclusion criteria included patients older than 18 years of age and cases lacking diagnostic confirmation by at least one of the aforementioned methods.

Data analysis was descriptive in nature. Continuous variables were expressed as means and medians with interquartile ranges (IQRs), while categorical variables were expressed as absolute frequencies and percentages. ❑

RESULTS

The following section presents the clinical, biological, radiological and therapeutic data of the study participants, with the aim of characterizing the profile of MP infection in hospitalized children and identifying potential factors associated with severe development and increased duration of hospitalization. The study group included 57 patients, of whom 28 (49.1%) were girls and 29 (50.9%) boys.

Regarding age group distribution, there were 22 (38.6%) patients over 12 years old, 24 (42.1%) subjects between 6–12 years old and the re-

maining 11 (19.3%) ones between 2–5 years old. The average age of the studied group was 10.56 years and the median was 12 years (IQR 7-14), with 70.1% of patients being in the 5–15 age group.

Related to the observed clinical characteristics, fever was present in most of the patients included in the study. Thus, 41 (72%) patients were febrile (>38°C), while eight (14%) subjects showed subfebrility (37.5–37.9°C) and another eight (14%) ones were afebrile. The duration of hospitalization was generally longer in patients who had fever (on average 6.8 days), compared to subjects with subfebrility (on average 5.5 days) and those without fever (on average 3.9 days). Coughing was present in almost all patients except one case. The characteristics of the cough were distributed as follows: 27 (47.4%) patients had dry cough, 28 (49.1%) subjects had productive cough and the remaining one had spastic cough. Comparing the group of patients who had productive coughs with those with dry coughs, we did not notice a significant difference in the duration of hospitalization (6.125 days and 6.37 days, respectively), but we observed a higher prevalence of complications (pleurisy, atelectasis, acute respiratory failure or sepsis) among those with productive coughs, 56.25%, compared to 33.33% among those with dry cough.

The radiological pattern also differed between the two groups: interstitial pneumonia was more frequently observed in patients with dry cough (33.33%), whereas lobar consolidation predominated in those with productive cough (with 18.75% showing interstitial involvement in this group).

In terms of blood tests, CRP was below 5 mg/L in eight (14.1%) patients and above 5 mg/L in 48 (84.2%) ones. The majority of patients with elevated CRP had values ranging from 5–100 mg/L and 40 cases, respectively. Values between 100–200 mg/L were recorded in six (10.7%) patients and values above 200 mg/L in two (3.6%) subjects, one of whom showing an extreme value of 506.47 mg/L. In the studied group, the mean value of CRP was 57.35 mg/L. Normal leukocyte count was determined case by case, depending on the patient's age, and as a result leukocytosis was observed in 14 (24.5%) of patients, with the maximum recorded value being $28.99\times10^3/\mu L$. A total of six patients (10.7% of all patients, 42.8% of cases with leukocytosis) had a leukocyte value of more than $20\times10^3/\mu L$. Another four patients (7.14% of the total, 28.6% of cases with leukocytosis) had leukocyte values between 15 and $20\times10^3/\mu L$). In terms of the association of fever with leukocytosis, of the 14 patients with leukocytosis, ten (71.4%) had fever, two subjects showed subfebrility and two patients had no fever, compared to the group of patients without leukocytosis, in which 73.8% had fever. Thus, the presence of leukocytosis was not associated with a higher frequency of fever in the study group. Of the patients with leukocytosis, seven subjects were aged six years or less and seven ones were over six years of age. The median of leukocyte values among seven patients with leukocytosis and six years of age or younger was $22.13\times10^3/\mu L$, higher than that of leukocyte values in seven patients over six years of age ($16.23\times10^3/\mu L$). The average duration of hospitalization among patients with leukocytosis was 6.14 days, with two cases of prolonged hospitalization (15 days). The average duration of hospitalization in those without leukocytosis was 6.26 days. Neutrophilia was identified in 32.1% of study participants, with a maximum recorded value of $22.38\times10^3/\mu L$. Patients with neutrophilia were divided into three categories: mild (sub$12\times10^3/\mu L$), moderate ($12–20\times10^3/\mu L$) and severe (over $20\times10^3/\mu L$). Nine patients (50% of those with neutrophilia, 16% of the total) had mild neutrophilia, seven patients (38.9% of those with neutrophilia and 12.5% of the total) had moderate neutrophilia and only two patients (11.1% of those with neutrophilia and 3.5% of the total) had severe neutrophilia. Neutrophilia was associated with complications in 61% of cases, almost double the non-neutrophilic group, of which 34.2% experienced complications. The average duration of hospitalization was slightly longer in those with neutrophilia (6.9 days) compared to the non-neutrophilia group where the average duration of hospitalization was 5.9 days (21, 22). Thrombocytosis was identified in five (8.9%) patients and thrombocytopenia in one patient (1.7%). The maximum platelet count was $711,000/m^3$ and the average platelet value among platelets was $590,000/m^3$. The average age of patients with an abnormally high platelet count was 5.8 years, with the majority (3/5 patients) being three or four years old. Only two

(3.5%) of the patients enrolled in the study did not show an increased level of anti-MP immunoglobulin type M, but showed increased levels of anti-MP IgA immunoglobulins. High levels of anti-MP type A immunoglobulins were found in 15 patients (26.3%), while elevated levels of anti-MP type G immunoglobulins occurred in 23 patients (40.3%). There was also an overlap between these patients, with 12 (21.05%) of them having high levels of both type A and type G and M immunoglobulins. Comparing patients with high immunoglobulins of types A, G and M anti-MP with those who had only high anti-MP type M immunoglobulins (19 patients or 33.3%), we observed a higher frequency of leukocytosis (4/12 patients or 33.3% compared to 3/19 patients or 15.8%), neutrophilia (4/12 patients or 33.3% compared to 4/19 patients or 21%) and complications (7/12 patients or 58.3% compared to 5/19 patients or 26.3%) in those with all three categories of elevated immunoglobulins. All seven subjects in this category who developed complications presented with pleurisy and two of them experienced acute respiratory failure. Patients with isolated elevation of M-type anti-MP immunoglobulins did not present with pleurisy; among the five who developed complications, most had acute respiratory failure (4/5), while one patient developed sepsis. Patients with elevated anti-MP immunoglobulins of types A, G and M, exhibited lobar consolidation on X-ray imaging, with seven of 12 cases (58.3%) involving the left lower lobe. Among those with isolated elevated M-type anti-MP immunoglobulins, only seven in 19 or 36.8% of patients experienced lobar X-ray condensates, of which three showed damage to the left lower lobe. The remaining ones (12 in 19 or 63.1% of patients) experienced interstitial impairment. Fever was slightly more common in those who had only anti-MP type M immunoglobulins (15/19 patients or 78.9% compared to 7/12 patients or 58.3%), as was atopic terrain (10/19 patients or 52.6% compared to 6/12 or 50%). The average duration of hospitalization was significantly longer in patients with all three classes of elevated immunoglobulins compared to those with only elevated IgM alone (8.75 days *versus* four days). Lung imaging was performed on all patients included in the study (Figure 1). Chest X-ray showed changes compatible with acute pneumonia in all patients. Marked interstitial markings suggestive of interstitial pneumonia were observed in approximately one quarter of patients (15 cases, 26.3%), whereas alveolar opacities consistent with lobar pneumonia were identified in roughly three quarters of patients (42 cases, 73.7%). Among cases with lobar involvement identified on chest radiography, the right lung was affected slightly more frequently, the changes being shown in 22 patients (52.4% of lobar cases, 38.6% of the total), compared to the left lung involved in 20 patients (47.6% of lobar cases, 35.1% of the total). The lower lobes were the predominant seat of the damage, being involved in 76.2% of lobar cases. The left lower lobe was most commonly affected, showing changes in 18 patients (42.8% of lobar cases, 31.6% of the total), followed by the right lower lobe, involved in 12 cases (28.6% of lobar cases, 21.05% of the total).

The duration of hospitalization was shorter in patients with interstitial appearance, with an average of 3.8 days, compared to those with lobar appearance, in whom the average was 6.97 days. Additionally, a complicated clinical course was significantly more frequent in the lobar group, where 17 (40.5%) patients developed pleurisy or atelectasis, compared with only one patient in the interstitial pneumonia group (6.67%), in whom pleurisy was recorded. Chest ultrasound was performed in 16 (28%) patients, revealing pleurisy in 15 (26.3%) cases. Thoracic computed tomography (CT) was conducted in two (3.5%) patients, with pleurisy measuring 22 mm identified in one of them. Among the study population, seven (12.5%) patients had comorbidities. The majority (6/7; 10.5% of all pa-

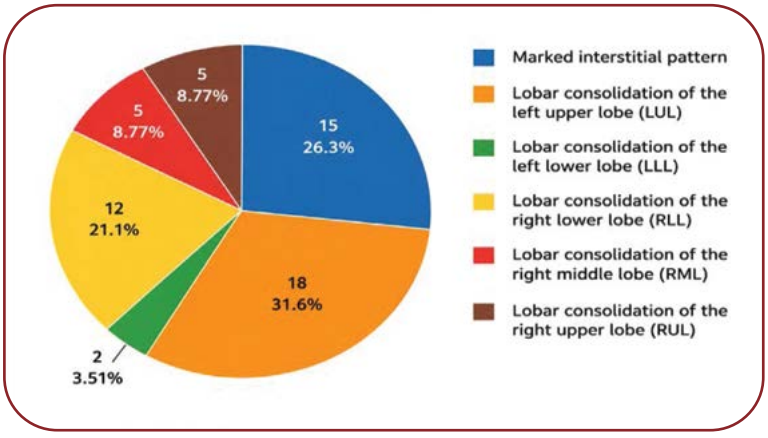

FIGURE 1. Radiographic changes on chest X-ray

tients) presented pulmonary comorbidities, specifically bronchial asthma, while one patient had a genetic condition, namely Down syndrome. An atopic background was identified in 26 patients (45.6% of the cohort). Among these, nine (34.6%) subjects developed complications (pleurisy, atelectasis, acute respiratory failure, or sepsis) and 15 (57.7%) presented with fever. In the non-atopic group, 14 (45.2%) patients experienced complications and 26 (83.9%) presented with fever.

The mean hospital stay for the entire cohort was 6.23±3.8 days. The median duration of admission was five days (IQR 3–8). Overall, 20 (35%) patients were hospitalized for more than seven days. Within this subgroup, six (30%) patients had no recorded complications and had an average length of stay of 9.5 days. The remaining 14 (70%) patients developed at least one complication (pleurisy, atelectasis, acute respiratory failure, or sepsis) and had a higher mean hospitalization duration of 11.1 days. Among these cases, 12 patients presented with pleurisy, one with left lower lobe atelectasis, four with acute respiratory failure, and two with sepsis. Several patients exhibited more than one complication simultaneously. Of the complete group of patients included in the study, 22 (38.6%) patients experienced at least one complication during clinical development. Of these, 17 patients (68% of those with complications) developed lung complications, the most common being pleurisy, identified in 16 patients (28.1% of the total), atelectasis of the lower left lobe, present in a patient, and IRA, diagnosed in seven patients (12.3% of the total). Sepsis was recorded in three (5.3%) patients. Complications were associated with prolonged hospitalization, the average duration of admission being 8.25 days in those who had complications compared to 4.6 days in subjects without complications.

Regarding therapeutic management, intravenous antibiotic therapy (Figure 2) was administered to 54 of the 56 hospitalized patients, while only two (3.57%) patients received oral-only treatment. The following percentages are calculated based on the 54 patients treated intravenously. Ceftriaxone was the most frequently prescribed antibiotic; it was administered to 51 (94.4%) patients, either alone or in combination. Its widespread use likely reflects the delay in confirming *Mycoplasma pneumoniae* infection after admission, prompting the initiation of broad-spectrum antibiotic therapy until the etiology of pneumonia was established. Other antibiotics included vancomycin (14.8%), azithromycin (11.1%), meropenem (11.1%), piperacillin/tazobactam (7.4%), clindamycin (3.7%) and intravenous clarithromycin (1.9%), most commonly in combination with ceftriaxone (Figure 2).

In terms of treatment strategy, intravenous monotherapy was used in 37 patients (66% of the entire cohort, representing 68.5% of those who received intravenous antibiotics), all of whom were treated with ceftriaxone alone. Combination therapy with two or more intravenous antibiotics was required in 17 patients (30.3% of the total cohort and 31.5% of those receiving intravenous treatment). The most frequently used combinations were ceftriaxone

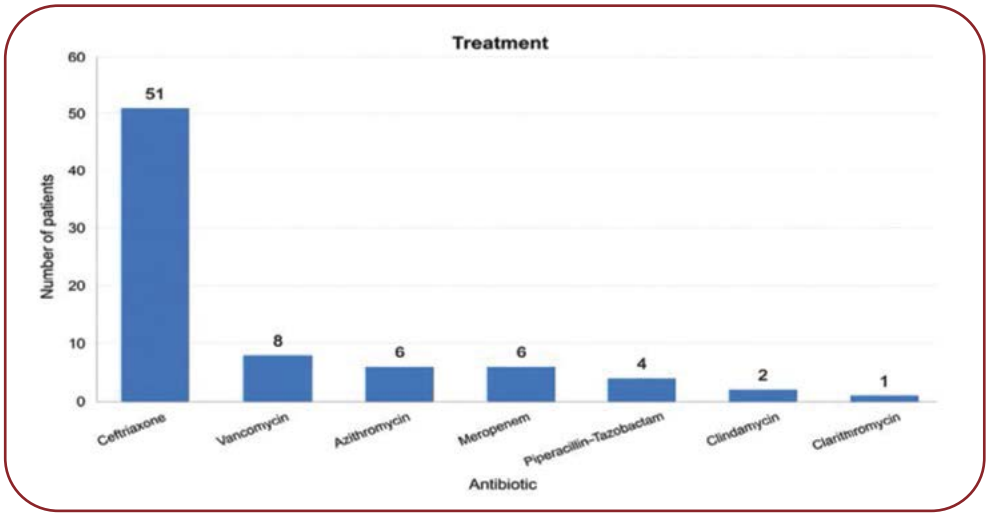

FIGURE 2. Intravenous treatment

plus vancomycin (seven patients) and ceftriaxone plus azithromycin (five patients). Clarithromycin was the most frequently prescribed oral antibiotic (Figure 3), which was administered as monotherapy to 22 (40.7%) patients and in combination with other oral agents to an additional 10 (18.5%) subjects. Among these combination regimens, it was paired with azithromycin in three cases and with other antibiotics in seven cases. Overall, 32 patients (59.3% of those receiving oral therapy) were treated with clarithromycin. Azithromycin was the second most frequently prescribed oral antibiotic; it was administered as monotherapy to 11 (20.4%) patients. Cefpodoxime was given to seven patients (13% of those receiving oral therapy): one patient received it as monotherapy, one in combination with azithromycin and five in combination with clarithromycin. Cefuroxime was also administered to seven (13%) patients, including two cases in combination with clarithromycin and five in combination with azithromycin. Other oral antibiotics included amoxicillin/clavulanate in two patients, levofloxacin in one patient and cefixime in one patient, the latter being administered in combination with azithromycin.

Overall, 53 of the 56 treated patients (94.6%) received at least one macrolide, which was administered either orally or intravenously. All patients were treated with at least one beta-lactam antibiotic, also via oral and/or intravenous routes. Clinical outcomes were favorable in all patients, who were discharged home without complications. ❑

DISCUSSIONS

The results of this study were compared with data from both national and international literature to identify similarities and differences in the epidemiological, clinical, paraclinical and therapeutic profiles of *Mycoplasma pneumoniae* infection in children. The age distribution observed in our cohort showed a higher prevalence among school-age children, which was consistent with findings reported in previous studies (6, 11-14). The sex distribution was balanced, in agreement with the results reported by Ulmeanu *et al* (15, 16). In contrast, Diaz *et al* conducted a study in a cohort of more than 16,000 patients and reported a slightly higher incidence among boys, who accounted for 56% of cases (6).

Diagnostic criteria varied across analyzed studies, reflecting both the evolution of clinical guidelines and heterogeneity of available laboratory methods. In the present study, the diagnosis of *Mycoplasma pneumoniae* infection was confirmed by either PCR performed on nasopharyngeal samples or detection of anti–*M. pneumoniae* IgM antibodies using a chemiluminescent immunoassay (≥10 AU/mL) in the presence of a compatible clinical presentation and radiological findings consistent with acute respiratory infection. Ulmeanu *et al* used similar diagnostic criteria, confirming *Mycoplasma pneumoniae* infection by either multiplex PCR or detection of specific IgM antibodies at a threshold of ≥10 AU/mL. The authors further noted that serological diagnosis was based on the detection of IgA, IgM and IgG antibodies, with definitive confirmation requiring paired serum samples collected at least two weeks apart, demonstrating either seroconversion or a minimum fourfold increase in antibody titers. IgM antibodies may be detected from the first week after symptom onset and typically peak during the third week. IgA antibodies appear earlier and decline more rapidly, whereas IgG antibodies become detectable after approximately two weeks and may persist long term. In the cohort reported by Ulmeanu *et al*, only a small proportion of patients (4.8%) were diagnosed exclusively by serology, while PCR was considered the reference method because of its high sensitivity and specificity (13, 15, 17). Similarly, Qin *et al* established the diagnosis according to current clinical guidelines (18), based on respiratory symptoms such as fever, cough, wheezing and dyspnea, together with imaging findings suggestive of pneumonia. Etiological confirmation required at least one of the following criteria: a serum antibody titer ≥1:160, a fourfold increase in serial antibody

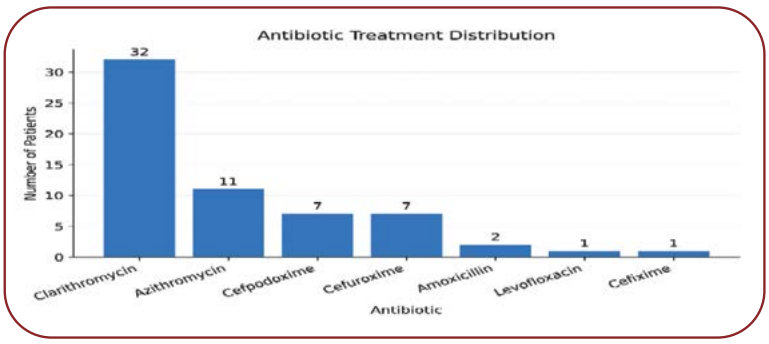

FIGURE 3. Oral treatment

measurements, or detection of *Mycoplasma pneumoniae* DNA or RNA in nasopharyngeal specimens (18, 19). These criteria are broadly consistent with those applied in the present study. Zhang *et al* analyzed the diagnostic criteria in two distinct periods (7). In the pre-COVID period, the diagnosis was based on a clinical picture characterized by persistent fever and cough (≥three days), associated with tachypnea and rales on auscultation, and etiological confirmation was made by an IgM antibody titer ≥1:160, at least a fourfold increase in IgG titer between two determinations, or detection of bacterial DNA/RNA from respiratory samples. During the post-COVID period, the criteria were updated according to the 2023 guidelines, including the presence of fever and cough, suggestive imaging findings and the identification of *M. pneumoniae*-specific genetic material or a serum antibody titer ≥1:160. The authors note that in the post-COVID period, 16.0% of confirmed cases were diagnosed by real-time PCR, while the majority (84.0%) were confirmed serologically, with comparable proportions between the two periods. Sreenath *et al* exclusively used real-time PCR on pharyngeal exudate samples, analyzing a cohort of 1,098 patients with clinical suspicion of acute respiratory infection (20). The authors emphasize the importance of molecular methods in establishing a definitive etiological diagnosis. Determination of specific IgM antibodies was performed in only 29.1% of confirmed patients, of whom 56.3% showed positive results, suggesting that isolated serological testing would have missed a significant number of cases. Biagi *et al* performed testing for *M. pneumoniae* based on clinical suspicion, at the discretion of the attending physician, noting that some cases, particularly those without clear respiratory manifestations, may be underdiagnosed. The authors also highlight that a positive PCR result does not always distinguish between active and prior infection, which represents a limitation common to several studies, including the present one (14).

The median duration of hospitalization in this study was five days, a result similar to that reported by Biagi *et al* (12, 14), who described an identical median duration (IQR 3.0–6.0). The values obtained by us were also close to those reported by Ulmeanu *et al* (15), with a mean duration of 7.5±2.9 days, and Zhang *et al* (7, 21), with the median hospitalization duration of seven days (range 5–8 days). The duration of hospitalization was longer in the study conducted by Sreenath *et al*, where patients had an average length of stay of 11±8 days. This difference can be partially explained by the characteristics of the study cohort: only 36% of the *M. pneumoniae*-positive patients were school-aged children or young adults and 21.8% of patients (12 cases) had malignancies, comorbidities that may significantly influence both the disease course and length of hospitalization (3, 6, 12). The observed differences may also reflect variations in admission criteria or specific characteristics of the healthcare system in India.

All patients in our study showed radiological changes, a finding similar to that reported by Zhang *et al*, in which only 1.3% of patients showed no changes (5, 7). Ulmeanu *et al* found a higher frequency of lobar involvement compared with interstitial patterns, but the proportion of interstitial pneumonia was lower than in the present study (11.1%). Similarly to our findings, Ulmeanu and colleagues also report a higher prevalence of right lung involvement (52.4%), which is explained by anatomical factors, the right main bronchus being shorter and more vertical. Zhang *et al* identified the right lower lobe as the most commonly affected, followed by the left lower lobe, in contrast to the findings of the present study (7, 11, 15).

Zhang *et al* (34%) and Sreenath *et al* (41.8%) observed leukocytosis in a smaller proportion of patients in comparison with our study (7, 20). Data from Biagi *et al* found a significantly higher median leukocyte count in children under two years of age compared with those aged six years and older. Although the present study did not include patients under two years of age, it demonstrated a higher median leukocyte count among patients under seven years of age with leukocytosis compared with those older than seven years. Ulmeanu *et al* also reported a higher mean leukocyte count in patients aged six years or younger compared with older patients (14, 15, 22). Zhang *et al* found that 14.6% of patients had CRP values above 10 mg/L, while Sreenath *et al* noted that 76.5% of *M. pneumoniae*-positive patients had elevated CRP levels exceeding 6 mg/dL. Ulmeanu *et al* reported moderately increased median CRP values, approximately seven times above the upper limit of normal (7, 15, 20).

We observed a similar prevalence of neutrophilia to that reported by the study of Zhang *et al*, where it was present in 33.4% of patients (7). The study by Biagi *et al* also reported an increased prevalence of neutrophilia, although the total leukocyte count largely remained within normal limits (14). Similarly, a study conducted by Ekemen *et al* in Turkey concluded that elevated neutrophil counts were associated with disease severity (3, 6), which was in line with the present study.

Other studies included a higher proportion of patients with comorbidities. For example, Sreenath *et al* reported comorbidities in 61.8% of patients (20). They found that only 36% of *M. pneumoniae*-positive patients were school-aged children or young adults, and only 5.45% had asthma. The study by Ekemen *et al* included 27.5% of patients with comorbidities, with bronchial asthma being one of the most common conditions (3, 7, 14).

In relation to encountered complications, Ulmeanu *et al* reported pleurisy in 27% of patients, which was a similar finding to that of the present study and another one conducted by Biagi *et al* (22.1%) (14). Ulmeanu *et al* also associated higher leukocyte counts with pleurisy (9322.8±2846.6 *vs* 7220.5±2038.6, p = 0.007), an association that was also observed in the present study, although weaker (15). In the studies by Sreenath *et al* and Zhang *et al*, pleurisy was much less frequent, occurring in 1.89% and 0.1% of patients, respectively (7, 20). Ulmeanu *et al* also reported acute respiratory failure in one patient (1.6%) (15). In relation to encountered complications, Ulmeanu *et al* reported pleurisy in 27% of patients, a result similar to those of both the present study and the one conducted by Biagi *et al* (22.1%) (14). Ulmeanu *et al* also associated higher leukocyte counts with pleurisy (9322.8±2846.6 *vs* 7220.5±2038.6, p = 0.007), an association that was also observed in the present study, although weaker (15). In the studies by Sreenath *et al* and Zhang *et al*, pleurisy was much less frequent, occurring in 1.89% and 0.1% of patients, respectively (7, 20). Ulmeanu *et al* also reported acute respiratory failure in one patient (1.6%) (15).

Regarding treatment, Ulmeanu *et al*, who also conducted their study in Bucharest, reported a high rate of macrolide use, with 86.8% of included patients receiving this class of antibiotics (15). Zhang *et al* reported macrolide therapy in 77.3% of patients, while Biagi *et al* described in-hospital macrolide use in 63.4% of cases, with 6.9% also receiving empirical macrolide treatment prior to admission (7, 14). The study by Sreenath *et al* reported macrolide uses in 34.1% of *M. pneumoniae*-positive patients; however, treatment-related data were limited, as PCR for *M. pneumoniae* was performed retrospectively in a small subset of patients and results were not available to guide therapeutic decisions (20). The study by Zhang *et al* (7) reported that 61.9% of patients received cephalosporin treatment and another 19.2% received penicillin treatment. The study by Biagi *et al* (14) noted that 44.1% of patients received empirical beta-lactam treatment prior to admission, without providing information on in-hospital treatment other than macrolides. In the study by Sreenath *et al* (20), 20.45% of patients received beta-lactam treatment. In the present study, only one (1.8%) patient received quinolone treatment, compared with eight (13%) patients in the study conducted by Ulmeanu *et al* (16) and nine (20.45%) subjects in the study by Sreenath *et al* (20).

Limitations of the study

The relatively small sample size (57 patients) limits the generalizability of our findings, particularly for subgroup analyses. The present study is restricted to the year 2025 and lacks pre-COVID data, making comparisons dependent on the published literature. Additionally, the absence of microbiologically confirmed macrolide resistance data limits interpretation of treatment patterns. Finally, the monocentric design and inclusion of patients from a tertiary care center may introduce selection bias toward more severe cases. ❑

CONCLUSIONS

Contrary to its classical characterization as an interstitial and self-limited disease, *Mycoplasma pneumoniae* pneumonia showed a predominance of lobar consolidation (73.7%), mainly affecting the lower lobes. Neutrophilia and the concomitant elevation of IgA, IgG and IgM antibodies were associated with increased disease severity, higher complication rates and prolonged hospitalization, suggesting potential prognostic value. Complications occurred in 38.6% of pa-

tients, most commonly pleurisy and were linked to significantly longer hospital stays. Macrolide use was nearly universal, reflecting local treatment practices and disease severity, although interpretation is limited by the lack of resistance data. These findings indicate a possible shift in disease presentation in the post-COVID period and highlight the need for larger prospective studies to validate the identified prognostic factors. ❑

Conflicts of interest: none declared.
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