

## A rare presentation of *Mycoplasma pneumoniae* with splenic nodules

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### ABSTRACT

*Mycoplasma pneumoniae* is a common respiratory pathogen that can cause a wide spectrum of extrapulmonary manifestations with neurological manifestations being the most common. Here, we report a rare case of splenic nodules in a 7-year-old girl with *M. pneumoniae* infection which responded well to macrolides. *M. pneumoniae* infection should be considered in children with extrapulmonary manifestations including splenic lesions.

**Key words:** Extrapulmonary manifestation, *Mycoplasma pneumoniae*, Splenic nodules

**M***ycoplasma pneumoniae* is a common pathogen that causes diseases of varying severity ranging from mild upper respiratory tract infection to severe pneumonia. It is a common cause of community-acquired respiratory infections in children and adults, especially in school-aged children. The frequency of *Mycoplasma* infection in community-acquired pneumonia in children ranges from 8% to 37.5% as reported in various studies [1-3]. Although, most of the time, it causes mild infection, sometimes children may be sick enough to require intensive care admission [1]. Although primarily *M. pneumoniae* causes respiratory infection, it can cause extrapulmonary manifestations in as high as 25% of patients [3-5]. The most common extrapulmonary manifestation is neurological involvement. Other manifestations include cardiovascular, hematological, polyarthritides, erythema multiforme, and gastrointestinal involvement. Splenic involvement is very rare.

Hypoechoic lesions in the spleen pose a diagnostic challenge and common causes include cyst, abscess, malignancy, infarction, and hematoma [6]. Infections causing multiple hypoechoic lesions in the spleen are less common. Here, we report a case of *M. pneumoniae* infection in a school-aged child with mild respiratory symptoms with multiple hypoechoic nodules in the spleen which improved with the use of macrolides.

### CASE REPORT

A 7-year-old girl, presented with fever for 7 days, documented up to 102°F, and dry cough for the initial 2 days. It was associated with intermittent abdominal pain which was diffuse in location.

There was no history of vomiting, loose stools, skin rash, or breathing difficulty. The child was given oral cephalosporins for 5 days but symptoms did not improve.

On examination, she was febrile with tachycardia (heart rate of 130/min) and tachypnea (respiratory rate of 32/min). There was no pallor, icterus, or significant lymphadenopathy. The liver was palpable 1 cm below the right costal margin with a span of 9 cm. The spleen was not palpable. The rest of the systemic examination was normal.

On evaluation, she had a hemoglobin of 10.2 g/dL, total leukocyte count of 11,200/mm<sup>3</sup> (N-30%, L- 62%, M-7%, E-1%), and a platelet count of 3.1 lakh/mm<sup>3</sup>. Renal and liver function tests were normal. C-reactive protein (CRP) was 5.7 mg/L. Other investigations showed normal urine examination, negative Widal test, and the blood culture was sterile. Chest X-ray was normal. Abdominal ultrasound showed a bulky spleen (8.3 cm) with multiple tiny hypoechoic nodules measuring 2–3 mm throughout the splenic parenchyma (Fig. 1) and normal liver parenchyma.

The child was initially started on ceftriaxone and other supportive care. In view of persisting fever and hypoechoic nodules in the spleen, *Mycoplasma* serology was done by enzyme immune assay and was positive (Positive cut off: >11 NTU; Index child: 18.1 NTU). Subsequently, the child was started on injectable azithromycin (10 mg/kg/day). The fever subsided in 48 h. Her oral intake and general well-being improved. Ceftriaxone was stopped and azithromycin was continued for 5 days. A repeat ultrasound abdomen done after 2 months showed normal liver and spleen with no hypoechoic nodules.

### DISCUSSION

*M. pneumoniae* is a common cause of acute respiratory tract infection, especially of the entity termed atypical pneumonia.

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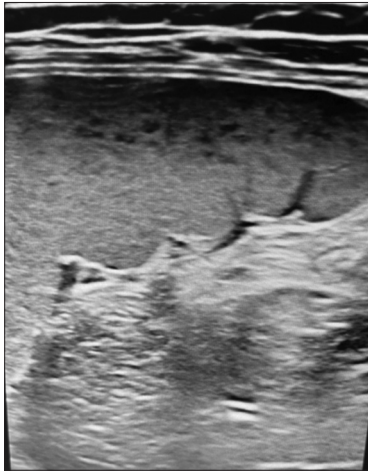
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**Figure 1: Ultrasound abdomen showing multiple hypoechoic nodules in the spleen**

Initially, it was known as the Eaton agent, after Eaton *et al.* identified this pleuropulmonary like organism from the sputum of patients with atypical pneumonia and later was renamed as *Mycoplasma*. *Mycoplasmas* are distinguished from other bacteria by the lack of cell wall structure. The absence of cell wall structure makes these organisms insensitive to commonly used beta-lactam antimicrobial agents and prevents them from staining by Gram stain [7].

About 25% of patients infected with *M. pneumoniae* may develop extrapulmonary complications, sometimes even without any respiratory symptoms [3-5]. Neurological manifestations are the most common extrapulmonary manifestations [3,8]. *Mycoplasma* are primarily mucosal pathogens that cause local symptoms after cytoadherence and release of proinflammatory cytokines [5]. The pathophysiological mechanism for extrapulmonary manifestations may be due to direct invasion by the organism or immune-mediated mechanisms due to cross-reactivity between human and *M. pneumoniae* antigens or vascular occlusion type induced either directly or indirectly [9].

Zou and Liang reported a case of an 8-year-old child with recurrent fever and mild respiratory symptoms with elevated erythrocyte sedimentation rate and CRP [10]. Ultrasound abdomen showed multiple small, hypoechoic, rounded, wedge-shaped, and well-defined nodules in the spleen. *Mycoplasma* serology was positive. The child improved with macrolide therapy. In the index case, the child had fever with mild respiratory symptoms for a shorter duration. However, CRP was not elevated as seen in the child reported by Zou and Liang. She also had multiple hypoechoic lesions in the spleen with positive *Mycoplasma* serology which responded to appropriate therapy. Karim Nasra *et al.* reported a case of a 39-year-old male with atraumatic splenic rupture (ASR) in whom no other underlying cause could be identified. He had diffuse ground glass opacities in the lungs, positive *Mycoplasma* serology with positive cold agglutinins and *Mycoplasma* infection was possibly attributed to the symptoms including ASR. Possibly vasculitis due to the *Mycoplasma* infection may have led to the formation of pseudoaneurysm and bleeding [11]. Furthermore, limited reports described splenic infarction in association with *M. pneumoniae* infection [12,13].

Hence, the involvement of the spleen in *M. pneumoniae* has been rarely reported to date. These include multiple hypoechoic lesions, splenic infarction, and ASR. The exact cause for the hypoechoic lesions in the spleen is not clear whether these are due to a micro abscess or lymphoid hyperplasia. As the clinical symptoms improved immediately with macrolide therapy in our case, similar to the one by Zou and Liang the pathophysiology is probably due to direct invasion by the organism.

## CONCLUSION

We report a rare case of splenic hypoechoic nodules in a child associated with *M. pneumoniae* infection. With increasing reports of various extrapulmonary manifestations associated with *M. pneumoniae* infection, it should be considered in children with atypical presentations including splenic hypoechoic nodules and early appropriate treatment should be initiated.

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## Ethical Approval and Consent to Participate

This article does not contain any studies with human participants or animals performed by any of the authors. Written informed consent was obtained from the parents for publication of this case report and images.

## Consent for Publication

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