

Case report

Cerebellar syndrome with meningoencephalitis due to *Mycoplasma pneumoniae*

Zohreh Aminzadeh, MD¹
Seyed Amin Zamiri, MD²
Babak Azadnia, MD²

¹Infectious Diseases Research
Centre, Shaheed Beheshti Medical
University, Tehran, Iran

²Loghman Hakim Hospital,
Shaheed Beheshti Medical
University, Tehran, Iran

Address for correspondence:

Dr. Zohreh Aminzadeh,
Infectious Diseases Research
Centre, Shaheed Beheshti Medical
University, Tehran, Iran
Tel: +9821 55411717
Fax: +9821 55416170
Email:
zohrehaminzadeh@yahoo.com

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Abstract

We report a 24-year-old woman with a *Mycoplasma pneumoniae* pneumonitis associated with subacute meningoencephalitis and acute cerebellitis that caused a cerebellar atrophy. Electroencephalogram showed diffuse dysfunction in the brain. There was few white blood cell but normal glucose and protein in the cerebrospinal fluid (CSF). Brain MRI showed bilateral atrophy of cerebellum.

Keywords: *Mycoplasma pneumoniae*; Cerebellar atrophy; Meningoencephalitis

Introduction

Neurological syndromes due to *Mycoplasma pneumoniae* infection are occasionally reported in adults, usually in the post-infection period [1]. Up to 7% of patients hospitalized with *M. pneumoniae* may have central nervous system (CNS) symptoms [2]. The cases suffered from demyelinating disorders of the central nervous system [1], middle cerebral artery thrombosis [1], myelitis [3-8], encephalopathy [9], acute disseminated encephalomyelitis [10], encephalitis [2,11], aseptic meningitis, polyradiculitis, cerebellar ataxia [2], acute cerebellitis and cerebellar atrophy [12] and hydrocephalus [13] due to *M. pneumoniae* infection.

Recent infection with *M. pneumoniae* was considered as a risk factor for cerebrovascular and CNS demyelinating disease [1]. We report a 24-year-old woman who developed early neurological complications associated with skin rashes before respiratory manifestations of *M. pneumoniae* occur.

Case history

A 24-year-old woman was admitted with fever, chills, scanning speech, nausea, vomiting and dizziness that had begun three days before her hospitalization. On physical examination, nothing much was found. She didn't complain of any respiratory symptoms. There were neck rigidity, abnormal cerebellar tests (ataxia, heel to shin test, wide base gate, and finger to nose), and she was hypotonic at the time of admission. Brain CT scan without contrast was normal. In cerebrospinal fluid (CSF), the number of WBC was eight cells (90% neutrophil, 10% lymphocyte), but the glucose and protein were normal.

The pruritic macula-papular rashes appeared on the second day after admission which distributed on the whole of the body (face, neck, chest, abdomen, and

extremities). Repeated lumbar punctures showed similar results. On the fourth day after admission, the cough appeared and her chest X-ray showed the peribronchial infiltration. Electroencephalogram (EEG) reported a generalized slow background in the range of 6-7 cycles per second (CPS) that waves dominantly. A few degree of alpha activity in the range of eight CPS were seen in some occasion which was correlated with clinical diagnosis of diffuse cerebral dysfunction. Brain MRI with and without contrast showed bilateral atrophy of cerebellum.

Cold agglutinin tests quantitative and qualitative were positive with the titre of 1/128. Azithromycin was administered for 14 days; as a result, fever and diarrhea were ceased. Desquamation of rash was begun; the cerebellar tests changed to be normal and patient could talk fluently. Clinical recovery has been completed within six weeks.

Discussion

Neurological disorders associated with *M. pneumoniae* infection [1,10,14,15], which usually happens in post infectious period [1,9,14], and sometimes accompanied by active chest infection were reported [3, 16]. But in this case, symptoms and signs of *M. pneumonitis* appeared after cerebellitis. In her CSF, the number of cells increased and there were not changes in glucose and protein. This is compatible with Tokisawa *et al.* [9] and Socan *et al.* [14].

Acute cerebellitis, cerebellar atrophy, encephalopathy, acute disseminated encephalomyelitis, encephalitis, and meningoencephalitis associated with *M. pneumoniae* infection have been reported by many investigators [2-3,9-13], but reports on *M. pneumoniae* induced subacute meningoencephalitis with acute cerebellitis are few. The mechanism of damage caused by *M. pneumoniae* remains unclear [2,4,17].

The isolation of *M. pneumoniae* from the CSF undoubtedly confirms the invasion to the CNS or, at least, to the CSF [7]. Direct invasion, neurotoxin production, or an immune-mediated mechanism has been proposed [2,6].

The present case was not evaluated to isolate *Mycoplasma* by PCR or culture and diagnosis was based on her serology test results. Serologic testing is still primarily used by clinicians in order to establish the diagnosis of *Mycoplasma* infection. However, serologic testing is not appropriate technique to detect the infection. This is because PCR confirmed the CNS infections in cases with negative serologic test results [18]. Presently, PCR for detection of *M. pneumoniae* sequences has been recommended for better detection especially in neurologic manifestations [19]. Clinical recovery occurred in our case within three to six weeks, which is compatible with Coleman *et al.* [13] and Socan *et al.* [14] experiences. *M. pneumoniae* infection should be considered in those patients with CNS manifestations of unknown cause, particularly if they appear in association with primary atypical pneumonias.

Conflict of interest statement: All authors declare that they have no conflict of interest.

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References

- 1) Sutgiu S, Pugliatti M, Rosati G, Deiana GA, Sechi GP. Neurological disorders associated with *Mycoplasma pneumoniae* infection. *Eur J Neurol.* 2003; 10: 165-8.
- 2) Guleria R, Nisar N, Chawla TC, Biswas NR. *Mycoplasma pneumoniae* and central nervous system complications: a review. *J Lab Clin Med.* 2005; 146: 55-63.
- 3) Goebels N, Helmchen C, Abele-Horn M, Gasser T, Pfister HW. Extensive myelitis associated with *Mycoplasma pneumoniae* infection: magnetic resonance imaging and clinical long-term follow-up. *J Neurol.* 2001; 248: 204-8.
- 4) Yiş U, Kurul SH, Cakmakçi H, Dirik E. *Mycoplasma pneumoniae*: nervous system complications in childhood and review of the literature. *Eur J Pediatr.* 2008; 167: 973-8.
- 5) Tsiodras S, Kelesidis T, Kelesidis I, Voumbourakis K, Giamarellou H. *Mycoplasma pneumoniae*-associated myelitis: a comprehensive review. *Eur J Neurol.* 2006; 13: 112-24.
- 6) Candler PM, Dale RC. Three cases of central nervous system complications associated with *Mycoplasma pneumoniae*. *Pediatr Neurol.* 2004; 31: 133-8.
- 7) Csábi G, Komáromy H, Hollódy K. Transverse myelitis as a rare, serious complication of *Mycoplasma pneumoniae* infection. *Pediatr Neurol.* 2009; 41: 312-3.
- 8) Tezer H, Kara A, Haliloğlu G, Devrim I, Karli-Oğuz K, Sül D. *Mycoplasma pneumoniae*-associated transverse myelitis with unexpected rapid response to macrolide therapy: a case report. *Turk J Pediatr.* 2008; 50: 585-8.
- 9) Tokisawa S, Ichikawa Y, Koga T, *et al.* A case of encephalopathy accompanying *Mycoplasma pneumoniae* pneumonia in an adult. *Kansenshogaku Zasshi.* 1993; 67: 496-9.
- 10) Bouziri A, Khaldi A, Menif K, Ben Jaballah N. Acute disseminated encephalomyelitis associated with *Mycoplasma pneumoniae* infection in children: 2 case reports. *Tunis Med.* 2010; 88: 125-8.
- 11) Palumbo E, Malorgio C, Nasca G, Siani A, Branchi M, Bonora G. *Mycoplasma pneumoniae* encephalitis in immunocompetent child. *Recenti Prog Med.* 2008; 99: 306-8.
- 12) Martinez-Gonzalez MJ, Martinez-Gonzalez S, Garcia-Ribes A, Mintegi-Raso S, Benito-Fernandez J, Prats-Vinas JM. Acute onset ataxia in infancy: its aetiology, treatment and follow-up. *Rev Neurol.* 2006; 42: 321-4.
- 13) Coleman RJ, Brown JS, Butler P, Swash M. Cerebellar syndrome with hydrocephalus

- due to *Mycoplasma pneumoniae* infection. *Postgrad Med J.* 1990; 66: 554-6.
- 14) Socan M, Ravnik I, Bencina D, Dovc P, Zakotnik B, Jazbec J. Neurological symptoms in patients whose cerebrospinal fluid is culture- and/or polymerase chain reaction-positive for *Mycoplasma pneumoniae*. *Clin Infect Dis.* 2001; 32: E31-5.
- 15) Tsiodras S, Kelesidis I, Kelesidis T, Stamboulis E, Giamarellou H. Central nervous system manifestations of *Mycoplasma pneumoniae* infections. *J Infect.* 2005; 51: 343-54.
- 16) Thomas NH, Collins JE, Robb SA, Robinson RO. *Mycoplasma pneumoniae* infection and neurological disease. *Arch Dis Child.* 1993; 69: 573-6.
- 17) Koskiniemi M. CNS manifestations associated with *Mycoplasma pneumoniae* infections: summary of cases at the University of Helsinki and review. *Clin Infect Dis.* 1993; 17 Suppl 1: S52-7.
- 18) Abele Horn M, Franck W, Busch U, Nitscho H, Roos R, Heesemann J. Transverse myelitis associated with *Mycoplasma pneumoniae* infection. *Clin Infect Dis.* 1998; 26: 909-12.
- 19) Zambrano Y, Chiarello A, Soca A, et al. Use of polymerase chain reaction for the diagnosis of central nervous system infections. *Invest Clin.* 2006; 47: 337-47.