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Meningoencephalitis in a Child with Mycoplasma Pneumonia

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ABSTRACT

The patient is a 15-year-old girl who presented with a 4-day history of fever, a persistent cough, and x-ray evidence of a right middle lobe pneumonia. On day 10 of her illness, at a time when she was afebrile and her pneumonia had cleared, she developed a severe headache and within hours lapsed into coma. Cerebral spinal fluid analysis and serological tests were diagnostic of a post-infectious meningoencephalitis due to *Mycoplasma pneumoniae*.

Keywords: Meningoencephalitis; Mycoplasma Pneumonia

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Case report

The patient is a 15-year-old girl who presented with a 4-day history of fever and a persistent non-productive cough. On the day of admission, she developed right-sided chest discomfort and mild dyspnea and was admitted to the hospital.

The patient's past medical history was otherwise unremarkable. She had been immunized to measles, mumps, rubella, and pertussis, and was unaware of any exposure to a respiratory illness.

On physical examination she was in moderate respiratory distress. Her temperature was 40 degrees centigrade, respirations 18 breaths per minute, pulse regular at 110 beats per minute, and blood pressure 110/70 mm Hg. Her physical examination was remarkable for the presence of inspiratory crackles and dullness over the right middle lobe. The remainder of her examination was within normal limits.

Admission laboratory assessment revealed a white blood cell count of 24,100 cells per cumm with 80% neutrophils and 20% lymphocytes. Her basic metabolic panel was normal, and she was unable to produce sputum for examination. Her chest x-ray revealed a right middle lobe infiltrate (see Figure 1).

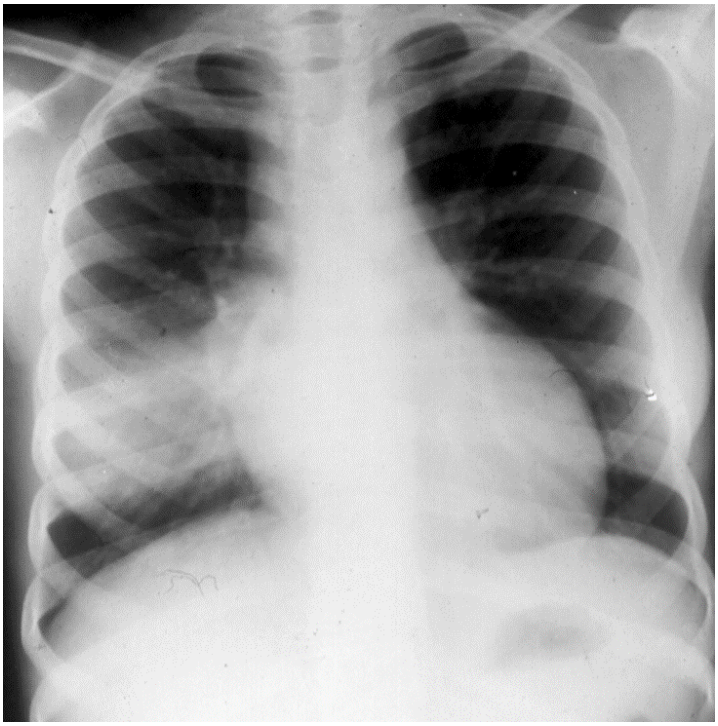

Figure 1. Chest x-ray of the presented case showing consolidation of the right middle lobe. In their study of 24 children with mycoplasma pneumonia, Medjo and associates reported that radiological characteristics included linear opacities (50.0%), patchy infiltrates (16.7%), segmental or lobar consolidation (8.3%), Interstitial infiltrates (8.3%), reticulo-nodular infiltrates (8.3%) and pleural effusions (8.3%).

Serum samples were sent for measurements of cold agglutinins and Mycoplasma pneumoniae complement fixation antibodies.

The patient was placed on intravenous ampicillin for 5 days and then switched to oral erythromycin for an additional 5 days when her complement fixation antibody titer was returned as positive. She became afebrile, her chest x-ray cleared, and her white blood cell count fell to 10,800 cells per cumm. Her cold agglutinin titer measured on admission was negative.

On day 10 of admission, while waiting for discharge, she suddenly complained of a severe diffuse headache. Her temperature spiked to 39.2 degrees centigrade, she became lethargic and lapsed into a coma. On examination she had no meningismus or focal neurologic findings. Her white blood cell was 23,200 cells per cumm, and

her cerebral spinal fluid analysis revealed a lymphocytic pleocytosis of 50 cells/cumm, 5-10 red blood cells per HPF, a protein of 110 mg/dL, and a normal glucose level. Gram stains and cultures of the CSF were negative. Serology for mycoplasma complement fixing antibodies was positive at a 1:16 dilution. She was placed on parenteral erythromycin and her neurological status and temperature gradually improved. By day 5 post-coma she was fully responsive. A cold agglutinin titer done at that time was positive at a dilution of 1:512. She was discharged 33 days post-admission after a slow recovery from her illness. At discharge, her mycoplasma complement fixation and cold agglutinin titers were positive at a dilution of 1:32 and 1:64, respectively (see Figure 2).

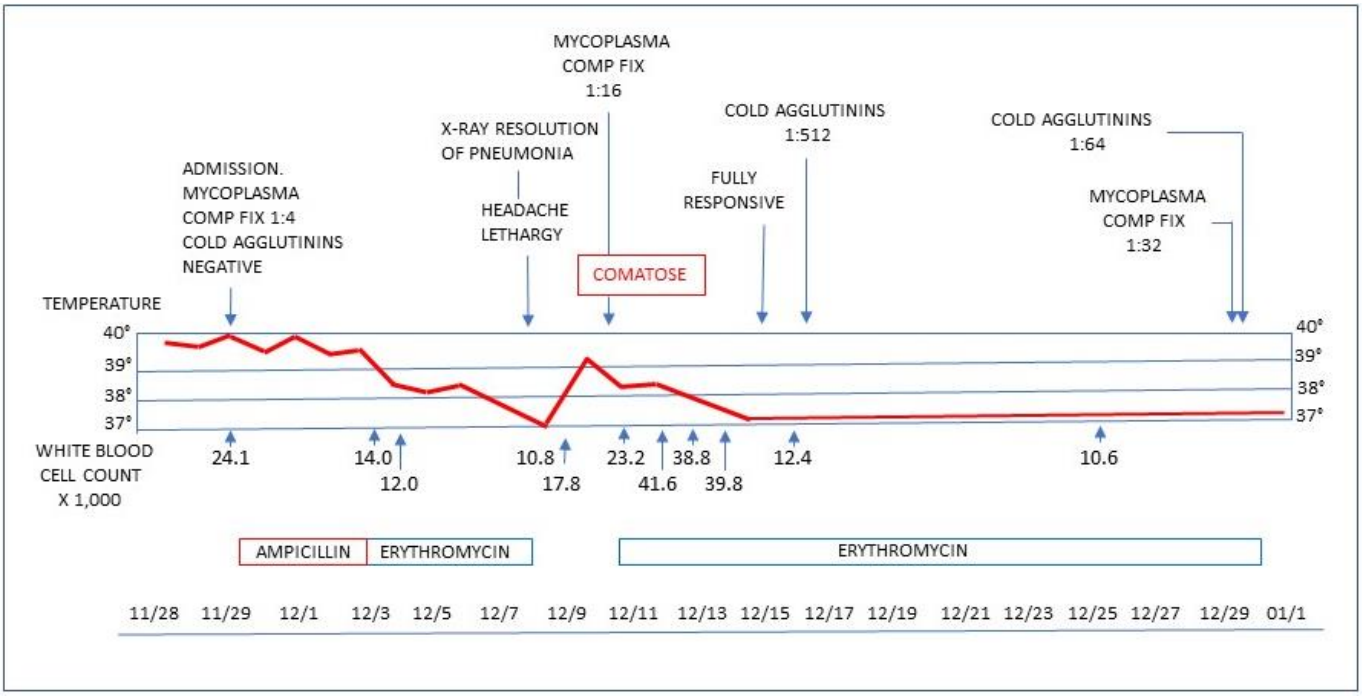

Figure 2. The clinical course of the presented case. Comp Fix, complement fixation.

Discussion

Mycoplasma pneumoniae is one of the major causes of lower respiratory tract infection in children and adults, accounting for up to 40% of community acquired pneumonias. The organism is ubiquitous, active throughout the year, with an incubation period from infection to clinical disease of 2-4 weeks [1]. Mycoplasma pneumonia appears as a cyclic epidemic disease with a 3 to 7-year interval worldwide [2]. Common symptoms of mycoplasma pneumonia in children include cough, fever, headache, and coryza [3].

The diagnosis of *Mycoplasma pneumoniae* infection in the presented case is based on the rising titers of complement fixing antibodies and cold agglutinins (from 1:4 to 1:32 and 0 to 1:512, respectively). In their study of 46 serum samples from 27 patients with PCR documented *Mycoplasma pneumoniae* infection, Beersma and associates found the complement fixation assay to be 65% sensitive and 97% specific [4]. And in a study of 418 children with mycoplasma pneumonia, Lee and associates found that acute and convalescent cold agglutinin titers correlated with mycoplasma-specific antibody titers and concluded that cold agglutinin titers can be used as an adjuvant diagnostic test [2].

Two weeks from the onset of symptoms, after she recovered from her pneumonia and was ready for discharge, our patient developed an acute onset headache and within two days lapsed into coma. Her clinical features and cerebral spinal fluid analysis supported a diagnosis of meningoencephalitis. In this regard, Bitnun and associates found evidence of *Mycoplasma pneumoniae* infection in 50 (31%) of 159 children with acute encephalitis [5]. A number of other neurologic disorders have been described

in association with *Mycoplasma pneumoniae* infection, including aseptic meningitis, cerebellitis, optic neuritis, cranial nerve palsies, Guillain-Barre syndrome, acute demyelinating encephalomyelitis and transverse myelitis [6].

In most cases of mycoplasma-associated encephalitis it is unclear as to whether the illness is a post-infectious immunologically-mediated disease or the result of direct infection of the CNS; the evidence in the presented case favors the former possibility since the illness occurred at a time when her pneumonia had cleared and her immune response was peaking.

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