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Acute pneumonia associated with Chlamydiapneumoniae infection: a case report

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Acute pneumonia associated with Chlamydia pneumoniae infection : a case report

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Chlamydia pneumoniae is the recently recognized third species of Chlamydia associated with human disease. It is an important cause of respiratory tract infection. The disease occurs worldwide, more commonly in adults than in children. We report the case of a 12-year-old boy presented with acute respiratory symptoms. Roentgenogram of the chest showed minimal reticular infiltration in the right lower lung with minimal right pleural effusion confirming the diagnosis of pneumonia. The evidence of current C. pneumoniae infection was confirmed by the microimmunofluorescence test for C. pneumoniae IgM 1:64 , IgG 1:256 in acute serum., and IgM 1:128, IgG 1:256 in the second serum sample at a four-week interval. He received roxithromycin 150 mg twice a day for 14 days showing a good response. One should consider C. pneumonia as a cause of acute community acquired pneumonia in children.

Key words: *C. pneumoniae pneumonia, Pleural effusion.*

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คลามิเดีย นิวโมนิอิ จัดเป็นคลามิเดียชนิดที่สามก่อโรคในคน โดยเป็นสาเหตุสำคัญของโรคติดเชื้อทางเดินหายใจ การติดเชื้อนี้พบได้ทั่วโลกพบในผู้ใหญ่มากกว่าเด็ก บทความนี้เป็นรายงานผู้ป่วยเด็กชาย 1 ราย อายุ 12 ปี มีอาการของโรคติดเชื้อทางเดินหายใจ การตรวจภาพรังสีปอดพบความผิดปกติบริเวณชายปอดด้านขวาเป็นลักษณะ : reticular infiltration และ minimal pleural effusion. ผลการตรวจโดยวิธีไมโครอิมมูโนฟลูโอเรสเซน แสดงว่ากำลังมีการติดเชื้อคลามิเดีย นิวโมนิอิ ในการตรวจน้ำเหลืองครั้งแรกพบระดับ IgM 1 : 64, IgG : 256 และครั้งที่สองห่างกัน 4 สัปดาห์ พบระดับ IgM 1 : 128 และ IgG 1 : 256 ผู้ป่วยตอบสนองดีต่อการรับประทานยา roxithromycin ขนาด 150 มก. วันละ 2 ครั้ง เป็นเวลา 14 วัน แพทย์ควรจะคำนึงถึงเชื้อคลามิเดีย นิวโมนิอิ ด้วยว่าอาจเป็นสาเหตุของโรคปอดบวมในเด็ก

Chlamydia pneumoniae is a recently recognized human pathogen that can cause pneumonia, bronchitis, pharyngitis, otitis media, sinusitis,[1] and may also trigger acute episodes of wheezing in patients with asthma.[2] In adults, there have seen several reports of an association between coronary artery disease, atherosclerotic syndromes and C. pneumoniae infection.[3-5] Worldwide seroepidemiological studies revealed that approximately 50% adults have antibodies to this pathogen. The prevalence undergoes the greatest change in children between 5 and 15 years of age and continues to rise throughout adult life reaching 70-80% in the elderly.[6] The population prevalence was higher in tropical, less developed countries than in more northern developed countries. Nunthapisud et al.[7] reported a seroprevalence of 37% in Thai school children on a worldwide scale C. pneumoniae has been associated with pneumonia in 6-19%.[8-15] As yet, There has not been any study of this infection in connection with lower respiratory tract infection in Thai children. We herein report a child with pneumonia associated with C. pneumoniae infection.

Case Report

A 12 year old boy presented with sore throat and a cough producing green mucoid sputum for seven days. He reported a high fever for the previous three days. Physical examination revealed body temperature of 39^{0}C, respiratory rate of 24 beats/min, pulse rate of 100 beats/min, and blood pressure of 90/50 mm Hg. The pharynx was erythematous, and medium crepitation was heard at the base of the right lung. Initial laboratory investigations included a white blood cell count of 15300/mm^3 with 81% neutrophils, 9% lymphocytes, 2% atypical lymphocytes, 8% monocytes. The hematocrit was 34% and the platelet count 345,000.

A chest roentgenogram showed minimal reticular infiltration in the right lower lung with minimal right pleural effusion. (Fig.1) A diagnosis of pneumonia, probably due to mycoplasma was made, and the patient was treated with roxithromycin 150 mg twice a day. Throat swab was performed for polymerase chain reaction (PCR) detection of Mycoplasma pneumoniae, and blood was drawn for serology for M. pneumoniae and Chlamydia pneumoniae. When seen in the clinic seven days later, the patient reported

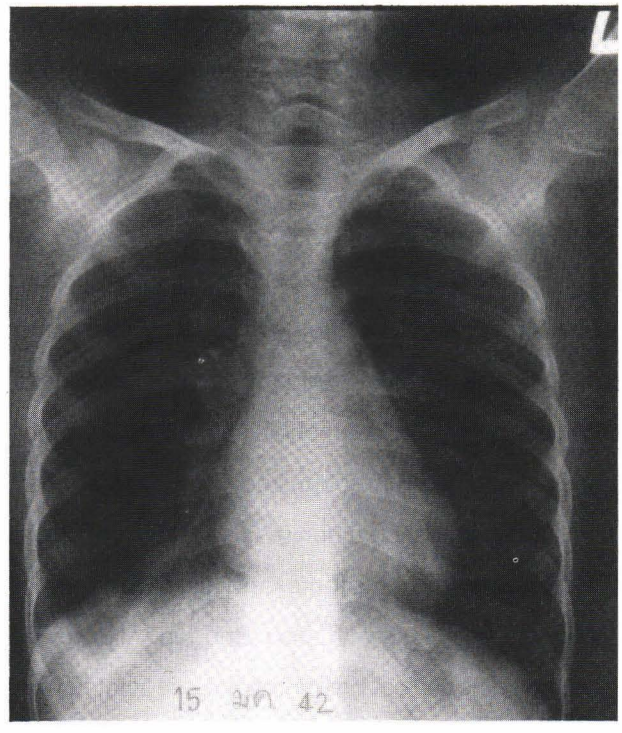

Figure 1. Chest radiograph demonstrates minimal reticular infiltration in the right lower lung with minimal right pleural effusion.

improvement beginning two days after having started the treatment with roxithromycin. The fever had disappeared on the third day of treatment but there was still some coughing. On examination, the temperature and breath sounds were normal. He received roxithromycin to complete 14 days of treatment, which resulted in complete recovery. A follow up chest radiograph four weeks later showed complete clearing of infiltration and pleural effusion in the righ lower lung. The second blood specimens were sent for antibody testing for M. pneumoniae and C. pneumoniae.

Laboratory results included negative PCR for M. pneumoniae, negative antibody for M. pneumoniae by particle agglutination test with a titer below 1:40 with both the first and second specimen. Microimmunofluorescence for C. pneumoniae with the first serum showed IgM 1:64 and IgG 1:256, and the second serum sample four weeks later showed IgM1:128, IgG 1:256. Subsequently he was lost to follow-up.

Discussion

Acute C. pneumoniae infection can range from asymptomatic to life - threatening. Pneumonia and bronchitis are the most frequently recognized illness associated with C. pneumoniae, although asymptomatic infection or unrecognized mildly symptomtic illness are the most common result of infection. There are no specific symptoms and signs unique to pulmonary infections with this pathogen.[6] However, there are some clinical presentations associated with this infection. Although some cases have an acute onset, a more gradual onset is typical. Pharyngitis, sometimes with hoarseness is often present early in the course of the illness, may regress spontaneously and cough with signs of lower respiratory tract infection develops from several days to weeks after the first symptoms giving the appearance of a biphasic pattern. Cough is often prolonged. There may be a history of fever, but fever is often not present at examination. Sinusitis, otitis media either as one of the initial complaints, or as a later complication may accompany C. pneumoniae infection.[16] If the lower respiratory tract is involved, rhonchi and rales are often heard on auscultation. A chest radiograph usually demonstrates a single subsegmental pneumonitis in milder cases, bilateral pneumonitis or pleural effusions have also been demonstrated in more severe cases.

Most C. pneumoniae associated respiratory illness are relatively mild both in children and adults. C. pneumoniae pneumonia usually responds to outpatient treatment and seldom requires hospitalization. Persons who are hospitalized are often older and have chronic desease. In some cases, however C. pneumonia can cause severe illness, even in the absence of underlying disease. C. pneumoniae was isolated from the respiratory tract and pleural fluid of a previously healthy adolescent boy with severe pneumonia complicated by respiratory failure.[17]

Although the association of C. pneumoniae with pneumonia in our patient depends on serology,for the following reasons we believe that C.pneumoniae is causally related to the acute pneumonia syndrome in this child. M. pneumoniae infection which is the common cause of acute community acquired pneumonia is unlikely due to 1) the negative serological test in paired serum and a negative PCR test, 2) the high titer of IgM antibodies in either the acute or convalescent serum. IgM $\geq$ 16 has been proposed by Grayston et al. as the criterion for serological diagnosis of acute

C. pneumoniae infection.[1] In primary C. pneumoniae infection the C. pneumoniae MIF IgM antibody usually appears 3 weeks after the onset of illness. The IgG antibody titer may not appear until 6 to 8 weeks after onset. In case of reinfection, IgM antibody may not appear or may appear only at low titers, the IgG antibody titer rises quickly,often within 1 to 2 weeks, and may reach a value of 512 or above. 3) Although only a twofold rise in titer has been demonstrated, this may be due to premature detection of antibody response in the course of illness, and early treatment with specific antibiotics may have modified the antibody response.

It has been reported that symptoms associated with C. pneumoniae infection may be of long duration in adults and children[18,19] which is in contrast to our patient . If symtoms persist after one course of antibiotics, a repeated course is recommended.[1,2] Some reports have suggested that prolonged courses for up to 3 weeks may be required to eradicate C. pneumoniae from the nasopharyx of adults with flu-like illness and pharyngitis.[20] Erythromycin, tetracycline and doxycycline are recommened for treatment in adults where as erythromycin is suitable for children. The new macrolides, roxithromycin, azithromycin and clarithromycin have been demonstrated to be effective against C. pneumoniae in vitro.[21,22] There have been reports of roxithromycin in treating C. pneumonmiae pneumonia in adults with good clinical results.[23,24] One multicenter study compared erythromycin suspenstion 40 mg/kg/day with clarithromycin suspension 15 mg/kg/day, for 10 days, in children between 3 and 12 years of age with radiologically proven pneumonia. Both drugs were equally efficacious, yielding a clinical success rate of 95 and 98 percent, and eradicating the organism in 86 and 79 percent of the children, respectively.[14]

In the out - patient clinic it is not practical to evaluate the role of viruses as copathogens which may have contributed to the respiratory illness of our patient with C. pneumoniae infection. Previous studies in developed countries.[25] have shown evidence of mixed etiology in acute lower respiratory tract infections of children

C. pneumoniae also may act as an inflammatory trigger for asthma. There have been reports of patients with culture-documented C. pneumoniae infection who developed significant bronchospasm.[19,26] Emre et al.[27] reported an association of C.pneumoniae infection and reactive airway disease in children. There is evidence suggesting that the bronchial reactivity observed with C. pneumoniae infection may be IgE– mediated.[28] The potential of C. pneumoniae to cause prolonged and persistent infection may produce chronic inflammation and trigger bronchospasm in susceptible persons. Therefore, early recognition and treatment may prevent chronic lung infection. We also suggest that C. pneumoniae may be an important agent to consider as the causative organism of respiratory tract infection in children.

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