

INTRAUTERINE DUAL INFECTION WITH CYTOMEGALOVIRUS AND CHLAMYDIA TRACHOMATIS

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Human cytomegalovirus (CMV) is the most common cause of congenital and perinatal infections throughout the world. Chlamydia trachomatis during pregnancy also cause a wide variety of perinatal complications and neonatal pneumonia. We report a case of neonatal pneumonia caused by intrauterine dual infection with CMV and C. trachomatis. A two-day-old term infant was presented with tachypnea. His chest roentgenogram showed the interstitial pneumonia-like interstitial infiltrates. Results of microbiological examinations showed that he had been simultaneously infected with CMV and C. trachomatis in uterus.

Key words: Cytomegalovirus (CMV), Chlamydia trachomatis, Pneumonia

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INTRODUCTION

Human cytomegalovirus (CMV) is the most common cause of congenital and perinatal infections throughout the world (1). Chlamydia trachomatis during pregnancy also cause a wide variety of perinatal complications and neonatal pneumonia (2). Mother-to-infant infection of CMV has been caused by three routes, transplacental, transvaginal at delivery, and breast-feeding. C. trachomatis infection is mainly acquired by neonate through the birth canal.

We report a case of neonatal pneumonia caused by intrauterine dual infection with CMV and C. trachomatis. A two-day-old term infant was presented with tachypnea. His chest roentgenogram showed the interstitial pneumonia-like interstitial infiltrates. Results of microbiological examinations showed that he had been simultaneously infected with CMV and C. trachomatis in uterus.

CASE

A two-day-old term male was transferred to the neonatal intensive care unit (NICU) because of tachypnea with afebrile course and elevation of the value of C-reactive protein (CRP). He was born to a 41-year-old multiparous mother at 37 weeks' gestation by spontaneous vaginal delivery without

premature rupture of membrane (PROM) after uncomplicated pregnancy. Her amniotic fluid was not stained. The examination of his mother's endocervical swab at first trimester showed negative for C. trachomatis antigen.

His birth weight was 3,714g. He was in good condition at birth, but at 2 days of age he had tachypnea without fever. He showed no eye discharge. Respiratory sounds were clear but cyanosis was noted without inhalation of oxygen. His chest roentgenogram showed the interstitial pneumonia-like images with diffuse infiltration of bilateral lobes. The following laboratory data were obtained at the time of admission: white blood cell count 20,000/mm³ with 81% neutrophils, 9% lymphocytes, 2% eosinophils and 1% atypical lymphocytes; CRP 2.9mg/dl; serum IgG 1110mg/dl, IgA 28mg/dl and IgM 412mg/dl. No pathogenic bacteria were isolated from the throat and stools cultures.

Although treatment with piperacillin was started, the patient showed no clinical improvement. Tachypnea and radiographic appearance improved gradually after oral administration of erythromycin (50mg/kg/day) for 10 days.

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Microbiological Methods

The following serological data were obtained at day 8: Serum IgG and IgA antibody titers against *C. trachomatis* by enzyme-linked immunosorbent assay (ELISA) were 6.23 and 1.62 (the cut off titer was 0.8), respectively (PEPTIDE Chlamydia, Meiji Milk Products Co. Ltd., Tokyo, Japan). The titers of anti-CMV IgG and IgM antibody by ELISA were over 128.0 (the cut off titer was 2.0) and 1.22 (the cut off titer was 0.8), respectively (Medac Diagnostika, Hamburg, Germany).

At day 19, CMV-DNA was detected from his peripheral blood mononuclear cells by polymerase chain reaction (PCR) assay. He was discharged to home at the age of 23 days having grown well. We obtained the serological data of his mother at nine days after delivery. Serum IgG and IgA antibody titers against *C. trachomatis* were 7.14 and 2.00 (the cut off titer was 0.9), respectively, and serum anti-CMV IgG and IgM antibody titers were over 128.0 (the cut off titer was 2.0) and 0.47 (the cut off titer was 0.8), respectively. His mother's endocervical swabs for the examinations for chlamydial antigens were not obtained after delivery.

DISCUSSION

In general, infantile chlamydial pneumonia is characterised by an age of onset over 2 weeks (3). *C. trachomatis* infects vaginally born infants from mothers through her infected cervical secretion at delivery. While there were some reports that *C. trachomatis* can lead to intrauterine fetal infections without PROM (4-6). These cases were presumed to be associated with an ascending chorioamnionitis

The present case had been infected with *C. trachomatis* in uterus because the onset time was early after delivery. Moreover, it was rare that serological study demonstrated the intrauterine dual infection with *C. trachomatis* and CMV. It was assumed that the pneumonia of the present case was mainly due to chlamydial infection because of the clinical findings and the effectiveness of erythromycin.

Serological findings at day 8 showed that he had already infected with CMV in uterus because that day of age was earlier than incubation period of perinatal CMV infection (from 4 to 12 weeks). There was a study of infants between 1 and 3 months of age showed four pneumonitis cases caused by mixed infection of *C. trachomatis* and CMV

(7). The dual infection with *C. trachomatis* and CMV in uterus might predominate over the mechanism of the onset or the severity of the pneumonia. The further investigations are necessary to clarify the pathogenic roles of both *C. trachomatis* and CMV.

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