Bacterial Meningitis Due to Haemophilus Influenzae in Pregnancy: A Case Report

Atsushi Ikegami, and Junzo Kato

Department of Obstetrics and Gynecology, Yamanashi Medical College, 1110 Shimokato, Nakakoma, Yamanashi 409-38, Japan

Abstract: Bacterial meningitis is rare during pregnancy. We report on a 30-year-old pregnant woman with haemophilus influenzae meningitis, who was not immunocompromized host. Both of mother and fetus got a successful outcome with the intravenous administration of ampicillin and cefotaxime.

Key words: Bacterial meningitis, Pregnancy, Antibiotics

INTRODUCTION

Despite the availability of antibiotics that are highly active against most pathogens frequently implicated in bacterial meningitis, this disease continues to be associated with an unacceptably high incidence of morbidity and mortality. We report a case of bacterial meningitis due to Haemophilus influenzae in a 30-year-old woman during her second trimester of pregnancy and describe her treatment.

CASE REPORT

A 30-year-old woman (gravida 1, para 1) was admitted to our hospital at 28 weeks of gestation with nausea, vomiting, anorexia, and severe headache. She had apparently been well until three days earlier when she developed an upper respiratory tract infection. On the day of admission, she was vomiting and experienced chills; her temperature rose to 39.1°C (102.4°F). Within a few hours of admission, she lost consciousness. There was nuchal rigidity, a positive Kerning’s sign, and a positive Brudzinski’s sign. Ultrasonography demonstrated an average-sized fetus whose heartbeat was 150–160 bpm in the non-stress test (NST). The patient’s hemogram showed 16,500 white blood cells (WBC)/mm³, with 85% neutrophils, 10% monocytes, and 5% lymphocytes. Serum electrolytes were normal. The serum C-reactive protein (CRP) value was 28.3 mg/dL. Lumbar puncture revealed grossly purulent cerebrospinal fluid (CSF), with an opening pressure of 250 mm H₂O. Examination of the CSF revealed 1,060 WBC/mm³, with 88% neutrophils, 600 mg/dL protein, and 1 mg/dL glucose. Gram stain of the CSF was negative. CSF cultures grew Haemophilus influenzae. Cultures of specimens obtained from the blood, throat, nose, and urine were negative. Chest X-ray findings were normal. Maxillary sinusitis was absent.

Treatment consisted of the intravenous administration of ampicillin 8g and cefotaxime 8g daily for 10 days. The patient’s symptoms improved dramatically and she was discharged on the 20th hospital day.

At 38 weeks of gestation she was delivered of a live male infant weighing 2990 g; his Apgar scores were 0 at 1 min and 10 at 5 min. The
placenta weighed 540 g. One month later, mother and child remained well.

**COMMENT**

Worldwide, three bacterial species are responsible for more than 90% of cases of bacterial meningitis: *Haemophilus influenzae*, *Neisseria meningitidis*, and *Streptococcus pneumoniae*. *Haemophilus influenzae*, while it is the most common cause of bacterial meningitis in children in the United States, rarely causes meningitis in adults1). About 80% of cases in the United States occur in children under the age of 2 years; such meningitis, however, accounts for 1% to 3% of cases in individuals over the age of 15 years1). A study of factors implicated in the development of *H. influenzae* meningitis in adults revealed that 55% of patients had identifiable predisposing factors, including contiguous infection (sinusitis or otitis), pneumonia, epiglottitis, hypogammaglobulinemia, diabetes mellitus, alcoholism, or prior trauma to the head.1) It has been suggested that viral infections of the upper respiratory tract may be important in facilitating the direct dissemination of colonizing bacteria from the nasopharynx to the meninges. Our patient had experienced an upper respiratory tract infection before she developed the symptoms of meningitis. Sandberg et al2) reported a case of meningitis due to *haemophilus influenzae* in a pregnant woman at 35 weeks of gestation, in whom maxillary sinusitis was the most probable source of the infection.

Pregnant women, in general, have low total serum IgG levels, and neutrophil chemotaxis and cell-mediated immune functions are depressed during pregnancy. Thus, suppression of the maternal immune system by these factors, and a viral infection, may have contributed to the severe bacterial infection in our patient. The initiation of antibiotic treatment for bacterial meningitis must be “blind”, since, even if the infecting organism has been identified on a gram-stained smear, or by detection of a specific antibody, its sensitivity to antibiotics can not be determined for another 12 to 24 hr. The antibiotics chosen for the initial treatment of bacterial meningitis must therefore be active against all possible strains of infecting organisms. In normal adults between the ages of 18 and 50, *S. pneumoniae* and *N. meningitidis* are the most likely pathogens, so that ampicillin can be initiated. In adults with any of the complicating illnesses mentioned above, other organisms such as *H. influenzae* or gram-negative bacteria, may be involved, so that a third-generation cephalosporin, such as cefotaxime or ceftriaxone, should be given in addition until culture results become available.

In those in an immunosuppressed state, such as occurs during pregnancy, the risk of bacterial meningitis is significantly higher than in the general population. Accordingly, antibiotic treatment must be initiated early if an optimal outcome is to be obtained.

**REFERENCES**