

## Neonatal Meningitis in a Mature Baby

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### Abstract

Meningitis, an inflammation of covering of brain and spinal cord that can occur at any age, but when it occurs in new born babies, it is called neonatal meningitis. *Escherichia coli* (*E.coli*) are a common cause of meningitis in new born and associated most frequently with prematurity. *E.coli* meningitis can be acquired during birth or can develop secondarily after infection in another body site such as upper respiratory tract infection, omphalitis or infected circumcision wound. Patient was treated successfully with i.v Ceftriaxone.

### Keywords

*meningitis, new born, e.coli*

### Introduction

Meningitis is defined as an inflammation of the protective covering of the brain and spinal cord and it can occur at any age. Meningitis continues to be a formidable illness with high morbidity and mortality in India. Gram-positive cocci and gram-negative bacilli have been incriminated as bacterial aetiological agent of pyogenic meningitis in various studies<sup>1, 2</sup>. When newborn babies have meningitis, it is called neonatal meningitis. Neonatal meningitis is different from other kinds of meningitis because its causes are different and it is more fatal than meningitis in older children. The most common cause of neonatal meningitis is group B beta hemolytic *Streptococci* followed by *Escherichia coli* and other rare causes are *Listeria monocytogenes* etc. Here a case of meningitis in a mature baby is presented.

### Case Report

An eighteen days old baby admitted to Shishu Bhawan of

S.C.B. Medical College & Hospital Cuttack, Odisha in September 2010 with chief complaint of irritability, vomiting, refusal to feed and seizures. There is no history of bulging fontanels or diarrhoea. The baby was delivered normally in hospital at term with weight 3.1 kg and cried immediately. Physical examination revealed that baby was afebrile with normal pulse rate but there was difficulty in breathing. Cerebrospinal fluid (CSF) was collected through lumbar puncture with complete aseptic technique and send to Cure Well Laboratory (one of the reference laboratory in Odisha) Cuttack for microbiological investigation. Gram's stain of CSF showed plenty of pus cells along with few slender gram-negative bacilli (**Fig. 1**). CSF was then inoculated on Mac-Conkey agar and 5% sheep blood agar and incubated at 37°C. After 24 hrs of aerobic incubation there was a pure growth of lactose fermenting, translucent colony of 1-2 mm in diameter on Mac-Conkey agar. Blood agar also revealed the same morphology. Gram's stain was done again from both Mac-Conkey and blood agar and showed similar morphology as on direct microscopy. It was motile and identified as *Escherichia coli* by standard procedures<sup>3</sup>. Other laboratory findings were CSF Sugar 10 mg/dl, Protein 410 mg/dl, Chloride 104meq/L. CSF cytology showed Neutrophil -90%, Lymphocyte – 10% and total cell count 4600/dl. Antibiotic susceptibility test was performed by using Kirby-bauer disc diffusion method and zone size around each antimicrobial disc was interpreted as sensitive, intermediate sensitive or resistant according to NCCLS (now CLSI) criteria<sup>4</sup>. It was sensitive to Chloramphenicol, Amikacin and Ceftriaxone and patient was treated with i.v Ceftriaxone for 7 days and cured successfully.

### Discussion

*E.coli* meningitis is caused by bacteria, which grow in

the bodies of healthy people. Usually these bacteria do not harm, but some uncommon strains can cause serious disease. Majority of neonatal meningitis are caused by *E.coli* and Group B Streptococci (28.5% and 34.1% respectively). Among *E.coli* maximum cases were caused by a strain known as *E.coli* K1 and they mostly occurs in newborn or babies under 3 months of age<sup>5</sup>. In U.K and Ireland, adults and older children almost never get *E.coli* meningitis unless they have health problem that suppresses their immune system such as head injury or surgery to head, so that bacteria can enter via the head wound. It may also occur in people who have a CSF shunt.

Infection in babies may occur during delivery or from bacteria acquired in hospital or in home. Though premature and low birth weight babies are at higher risk of contracting meningitis but in our case prognosis was better probably because baby was delivered at term and its weight was 3.1 kg. Until about 1983, *E.coli* was the most common kind of neonatal meningitis in the U.K and Ireland, but since that time another kind that is Group B Streptococcal meningitis has become more prevalent. It is estimated that *E.coli* causes about 20% of cases of neonatal meningitis, but <2% cases of meningitis at all other ages. In developing countries, *E.coli* is much more important cause of meningitis<sup>6,7</sup>.

*E.coli* meningitis can be treated successfully with antibiotics, but management is serious, particularly in newborn and premature babies. Recovery from meningitis is better in older babies than in newborn and premature babies. In future, prevention of *E.coli* meningitis in newborn babies could be possible by vaccinating mother-to-be, but as yet, no vaccine has been developed.

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