

## Case Study

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## Salmonella Isolated in CSF of Newborn: Case Report

Swati Gupta\*, Anupama Mittal, Shallini Kakar, Poonam Gupta and Shalini Kakar

Department of Microbiology, Deen Dayal Upadhyay Hospital,  
Hari Nagar, New Delhi-64, India

\*Corresponding author

### ABSTRACT

#### Keywords

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Involvement of central nervous system is severe and sometimes fatal. One of the events responsible for meningitis to occur is how microbes cross the blood brain barrier and gets access to central nervous system. The present study is about a newborn suffering from a rare cause of meningitis i.e. *Salmonella*, which on early diagnosis and treatment get cured.

### Introduction

*Salmonella* is a gram-negative motile bacilli causes typhoid fever, focal septic infections, septicemia, and diarrhea. It colonizes a wide range of mammalian hosts. In humans *Salmonella* causes four forms of infections including enteric (68%), sepsis (8%), non-enteric focal infections (7%, including meningitis i.e. 0.8%) and a chronic carrier state (15%) (Saphra and Winter, 1957). In developing countries a rare cause of meningitis is *Salmonella* which is prevalent mostly among infants and young children (Keusch, 1998). It is known to be the fourth cause of meningitis in children, after *Neisseria meningitidis*, *Streptococcus pneumoniae*, and *Haemophilus influenzae* type b (H.i b). First case of *Salmonella* meningitis was reported by GHON in year 1908.

Salmonellosis is a widespread food born disease encountered frequently in countries with sanitation problem. Meningitis due to *Salmonella* carries a higher morbidity and mortality than that caused by other bacteria (John *et al.*, 2010). Mortality rates of 40% are reported for children due to *Salmonella* meningitis.

Among survivors, common complications are seizures, hydrocephalus, subdural empyemas, and permanent disabilities such as retardation, paresis, athetosis, and visual disturbances.

### Case report

A 23 days old girl was brought in pediatrics emergency department of our hospital with complaints of cough, cyanosis on & off since 7 days and difficulty in breathing since 1 day.

Past history revealed that she was delivered by Em LSCS in view of hypertensive mother. Her birth weight was 2.5 kg and she cried immediately after delivery with no antenatal, intranatal and postnatal complications

On initial examination HR was 148/min, RR was 64/min, crepts & wheeze were present on chest examination.

On CNS examination reflexes, tone was present. Suckling was also present and RBS was 88mg/dl.

After 4 days patient developed seizures, her neck reflexes were inconsistent, tone was increased & RBS was 75mg/dl

On CSF examination protein was 98mg%, sugar 51mg%, 20 cells /mm<sup>3</sup> were seen in which 80% were mononuclear cell and 20% were polymorphs. *Salmonella* species was isolated in culture report which was

agglutinating with 'O' antisera. Blood culture was negative. Gram stain was showing 0-1 pus cell /OIF. *Salmonella* isolate was sensitive to Ofloxacin, Piperacillin tazobactam combination, Netilmycin, Ciprofloxacin, Cefazolin, Levofloxacin, Amoxiclav, Amikacin, Gentamycin, Ampicillin, Cefotaxime. On giving Cefotaxime and Piperacillin Tazobactam combination the patient recovered on 5<sup>th</sup> day.

## Results and Discussion

Though meningitis due to *Salmonella* is very rare but it is very important problem in developing countries due to the high morbidity and mortality rates associated with this infection. *Salmonella* infection occurs on account of poor socioeconomic status and poor hygiene practices. Human infection caused by *Salmonella* is mainly manifested as typhoid fever. But *meningitis* caused by *Salmonella* is often under notified.



*Salmonella* on Blood agar



*Salmonella* on Macconkey agar

Human infection with *Salmonella* is most commonly caused by ingestion of food, water or milk contaminated by human or animal excreta. Younger children are more prone to get infections as they have poor macrophage function, poor antibody level, poor opsonin

activity and decreased neutrophil intracellular killing function (Ogubuike and Annapurni, 1988).

In developing countries *Salmonella* should also be kept in mind as a possible pathogen

while culturing CSF in cases of meningitis especially in the under 1 year age group. Rate of mortality and morbidity in infants can be reduced by considering the rare causes also.

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