Salmonella paratyphi-B meningitis, isolated from CSF

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Abstract : We report a case of meningitis due to Salmonella paratyphi-B, in an 11 month old male infant. The child was admitted in Emergency department with the complains of generalized convulsion and vomiting. On examination patient appearance of child was lethargic and irritable, had marked neck stiffness, with bulging fontanelle, lumbar puncture was done and sent for routine investigation, microscopy, culture and sensitivity. Later on Salmonella paratyphi-B was isolated from CSF

Key words: Salmonella paratyphi-B, meningitis, infant

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INTRODUCTION: In infants salmonella causing meningitis are often isolated from blood culture, but Salmonella isolated from CSF (Cerebrospinal Fluid) is very rare. Ghon, who has identified first case of salmonella meningitis reported in 1908 was due to salmonella paratyphi-B. (1) We report a case of salmonella isolated from CSF culture. Meningitis is an important cause of illness and death in infancy. (2)

CASE REPORT: An 11 month old male infant child was admitted in emergency dept. He had complains of intermittent fever since last week, gradually became lethargic and irritable and not taking feeding well. After one week he suddenly developed vomiting and generalized convulsion so, he was brought to emergency department of our hospital.

On examination child appeared to be lethargic and irritable with bulging fontanelle with no skin rashes. Temperature was 103 °F, pulse was 70/min. blood pressure was 100/60 mm of Hg and there was marked neck stiffness and all deep reflexes were diminished. Rest of the parameters were normal. According to his age his all developmental milestones were normal and birth history was full term, normal hospital delivery without any significant obstetrical problems. Weaning was started at the age of 5months, at that time he was only taking weaning food with skimmed milk everyday and not breast feed at all.

There was raised intracranial pressure suggestive by vital parameters and complain of vomiting. So fundus examination was done. It appear to be normal, so 10ml/Kg Mannitol Intravenous infusion was given and lumbar puncture was attempted and CSF sent for the routine investigation and microscopy & culture along with blood, urine, stool culture.

CSF was turbid in appearance. In Gram's stain of CSF few pus cells were seen with few gram negative bacilli. Along with decreased CSF glucose concentration (10 mg %), increased protein concentration (105mg %) and predominantly increased cell count of polymorph nuclear cells (200/mm^3).

Based on report of Gram's stain patient put on Intravenous Ampicillin 100 mg/kg/day. CSF culture done on Mac conkey agar, 5% sheep blood agar and chocolate agar. Second day on Mac conkey agar non-lactose fermenting, catalase positive, cytochrome oxidase negative colony appears. Later on it was identified as a Salmonella paratyphi-B by standard microbiological techniques and serogrouping carried out by slide agglutination with

specific antisera purchased from Denka Seiken Co. LTD, Tokyo, Japan.

According to CLSI (Clinical and Laboratory Standard Institute) guidelines this extra faecal isolates was tested with following six drugs Ampicillin, Levofloxacin, Cotrimoxazole, Chloramphenicol, Ceftriaxone and Cefotaxime. (3) Except Ampicillin all other drugs were sensitive in vitro. So patient was switched from Ampicillin to Ceftriaxone 100 mg/kg/day IV plus Levofloxacin 10mg/kg/day IV. Patient started improving gradually and after one week he appeared to be normal but complete 21 days intravenous treatment was given and on 21st day CSF was sent for routine investigation, microscopy, culture and sensitivity. All investigation results were within normal limit with negative culture report. All blood indices were within normal limit. Patient was discharged then after.

DISCUSSION: Meningitis due to salmonella group relatively uncommon condition but is of important public health problem in developing countries because of high mortality and morbidity rates in account of poor socioeconomic status and poor hygienic practice [4]. Among infants younger than 1 year of age with salmonellosis, the incidence is between 1.8 % and 4 %. The incidence of salmonella meningitis has been reported to be about 6 % of those with salmonellosis. (4)

Human infection with Salmonella is most commonly caused by ingestion of food, water or milk contaminated by human or animal excreta. Salmonella are primary pathogens of lower animals, which are the principal source of nontyphoidal salmonellosis in humans. Interestingly for Salmonella typhi human are the only known reservoir. (5) Young children are more prone to infection and at increased risk of potentially severe complication (e.g. septicemia and meningitis). (1) The reason for increased susceptibility relate to poor macrophage function, poor antibody level, poor opsonin activity and decreased neutrophil intracellular killing function. (4)

Our search for the potential source of infection in this patient identified was skimmed milk taken by the infant contaminated with salmonella paratyphi-B. Poor socioeconomic condition and poor hygienic practice are also supportive findings. It is possible that carrier state of the mother or of care giver may be responsible for the infection of infants. If so, it may be necessary to screen family member and treat appropriately. (4)

Duration of treatment varied between two to eight weeks. Salmonella species are facultative intracellular organisms. The ability to survive intracellular protects them from the action of extracellular antimicrobial agent. Complication have included 64 % relapse rate of meningitis and ventriculitis, 39 % subdural empyema, and 48 % subdural effusion. (4)

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