A rare case of salmonella meningitis in an immunocompetent pediatric patient

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ABSTRACT

Objective : to describe the clinical presentation and the severity of salmonella meningitis in immunocompetent children.

Patient and method : we describe a case of salmonella meningitis in a child.

Result : We report a case of a seven-month-old girl who presented with fever, seizures and an altered state of awareness. The cause was found to be salmonella meningitis. The major complication was a brain empyema that required surgery. The infant was put under a multitude of antibiotics. Unfortunately, she never regained full consciousness and died after fourteen days of hospitalization.

Conclusion : Meningitis is among the rarest and most dangerous manifestations of salmonellosis. Neurological complications are frequent despite the usage of various and potent antibiotics.

Key words : salmonella, meningitis, infant, complications, antibiotic

INTRODUCTION

Meningitis is a rare manifestation of salmonellosis [1]. However, it is common in some developing countries due to the prevalence of HIV infection and malnutrition [2,3]. Salmonella meningitis is a serious infection as it is associated with grave neurological sequelae and in many cases death. We report a rare case of salmonella meningitis diagnosed in immunocompetent infant.

CASE REPORT

A seven-month-old girl was admitted for a febrile status epilepticus. Two weeks before admission, the child suffered from diarrhea with unusually colored stool. One week later, she developed persistent fever that lasted for seven days. Then she suffered from tonic clonic seizure. On physical examination, the infant was severely dehydrated. Neurologically, she presented with an altered level of alertness as she was drowsy and irritable.Blood analysis revealed low hemoglobin level at 7.1 g/dL, high C-reactive proteine level at 43 mg/L. The spinal fluid was visibly purulent (figure1).

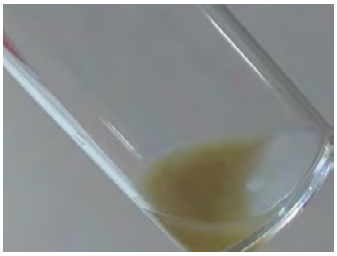

Figure 1 : Purulent cerebral spinal fluid

The cytology exam showed severe neutrophil pleocytosis. Glucose levels were extremely low and protein levels were high. Initial tests showed signs of gram-negative bacilli.
The patient was immediately treated with cefotaxime, vancomycin and ciprofloxacin. A brain CT scan revealed the presence of bilateral cerebral hemispheric empyema with midline shift (figure 2).

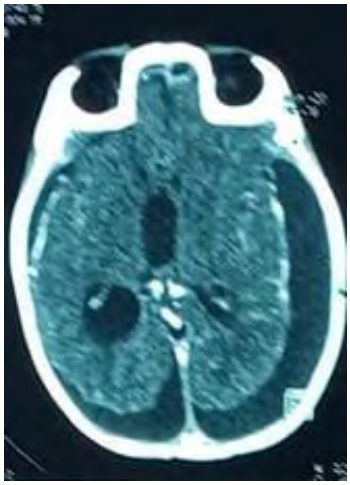

Figure 2 : CT scan showing bilateral empyema with midline shift

The infant underwent brain surgery. Per-operative examination revealed the presence of infected bilateral subdural hematoma. The spinal fluid and the evacuated pus cultures both confirmed the diagnosis of salmonellae enteritidis meningitis. It was resistant to ciprofloxacin which was replaced by

cotrimoxazole. Hemoculture, urine culture and stool culture all came back negative. Hemoglobin electrophoresis was normal. HIV serology came back negative so did immunity tests.
Brain CT scan performed 10 days post-surgery revealed persisting empyema although decreased in size, quadriventricular hydrocephaly and multicystic encephalomalacia. The electroencephalogram showed signs of severe brain damage. She died after fourteen days of hospitalization.

DISCUSSION

Non-typhoidal salmonella is a commonly found pathogen in gastroenteritis in children. Salmonella meningitis is rare. However, it's mostly seen in source-limited countries especially those with tropical weather [2]. Salmonella is considered the fourth causing bacterial agent for meningitis in Africa [3].
Salmonella meningitis occur particularly before the first year of age. This is mainly due to an immature immune system and an incompletely developed blood-brain barrier [1, 4]. Other risk factors include HIV infection, anemia, malnutrition and immunosuppression [5, 6]. In this observation, the only identified risk factor was anemia and young age.
In many cases, gastroenteritis precedes the first symptoms of meningitis [7]. It usually happens a week or two priors, and consists of vomiting and important diarrhea [2, 8]. High fever is a very common symptom. Other clinical features include altered state of awareness, irritability, seizures, anorexia and meningeal signs. Blood and stool culture should be performed [9].
Neurological complications are very common in salmonella meningitis. They include cerebral abscess, empyema, intracranial hemorrhage, subdural effusion, ventriculitis and hydrocephalus [2, 7]. Salmonella has an affinity for diseased tissue and such as hematomas and tumors [9]. Urgent brain imagery should be performed in order to detect complications that require surgical intervention, as was the case in this observation. Spinal fluid is frequently turbid and even purulent as was the case for this observation.
Antibiotics should be started immediately after lumbar puncture. Third generation cephalosporins are known to be the most effective antibiotics against Salmonella. The treatment should be maintained for 4 to six weeks [5]. Fluoroquinolones and cotrimoxazole are the most used antibiotics in addition to cephalosporins [1]. In this observation, the bacteria was resistant to ciprofloxacin and thus cotrimoxazole was added.
Unfortunately, salmonella meningitis can generate severe neurological sequelae in spite of adequate treatment. They can range from visual and hearing impairment to delayed development and cerebral palsy [2,10].

CONCLUSION

Grave neurological sequelae are common in salmonella meningitis despite antibiotic treatment. Many antibiotics have been used but the results are less than satisfactory so far. This gives rise to the need for more research and clinical experience.

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