

## Case Report

# A PLAUSIBLE COMMUNITY INDUCED SALMONELLA ENTERICA SEROTYPE PARATYPHI B INFECTION CAUSING INFANTILE MENINGITIS : A CASE REPORT

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## Abstract :

A female infant admitted with pyogenic meningitis due to Salmonella enterica serotype Paratyphi B. The organism was isolated from CSF and blood cultures.

Keywords: Meningitis, Salmonella, Salmonella enterica serotype Paratyphi B.

Salmonella meningitis is rarely encountered in developed countries *being* more common in developing countries <sup>1</sup>. Salmonella infections in the newborn, infants and pediatric age group carry special significance as they are associated with high morbidity and mortality. Impaired cell mediated immunity probably explains the high frequency of bacteraemia in children with HIV infection and malnutrition. <sup>2</sup> We present a case report of Salmonella enterica serotype Paratyphi B causing meningitis in a female infant.

## Case Report :

A four month old female child weighing 5.6 kg admitted at K.S Hegde Charitable Hospital, Mangalore, presented with moderate to high grade intermittent fever, bulging anterior fontanelle, refusal of feeds with lethargy and weak cry since two days associated with vomiting and drowsiness. There was history of one episode of involuntary movement

of both upper and lower limbs for 2 min. The child was born near term, by normal delivery, cried immediately after birth with no antenatal, intranatal and postnatal complications. Her

immunization was up to date.

On examination, child was lethargic, with regular heart rate of 120/min. Respiratory rate was 37/min with shallow respiration. No pallor, no cyanosis, no clubbing, no icterus or lymphadenopathy was present. Examination of skull showed anterior fontanelle 2 x 2 cm, bulging and pulsatile. No evidence of cranial nerve deficit was seen. Examination of motor system showed normal tone in all the four limbs, power more than grade 4. The patient had no meningeal signs at the time of admission.

Investigations done on the day of admission revealed that she was HIV antibody negative, HBsAg was negative, VDRL was non reactive.

The complete hemogram showed that total erythrocyte count was 3.8 million/c.mm., hemoglobin was 11.1 gm%, total leucocytes being 14000 c.mm, the differential count showed 72% Neutrophils, 18% lymphocytes, metamyelocytes 2%, Basophils 1% and 1% Eosinophils. Platelet count was 2,16,000 /c.mm. Erythrocyte sedimentation rate (ESR) was 45mm at the end of one hour by Westergren's method. Peripheral smear revealed toxic granulations.

Lumbar puncture revealed turbid cerebrospinal fluid (CSF). CSF cell count showed 90% neutrophils and 10%

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lymphocytes and little RBCs. CSF protein was 191 mg/dL and glucose was 8 mg/dL. Both CSF and blood were sent for culture. Gram staining of CSF showed pus cells with intracellular gram negative bacilli. CSF and blood were processed as per standard laboratory techniques<sup>3</sup>. The patient was treated with intravenous (IV) Ceftriaxone, IV Amikacin, and IV Mannitol along with IV fluids. The patient was recovering but one episode of fever was being recorded during the nights. Repeat lumbar puncture was recommended for which the parents disagreed and the patient was not available for follow up. The CSF and blood culture grew gram negative bacilli which were motile, reduced nitrate, indole negative, citrate utilized, and Voges-Proskauer and urease test negative. Triple sugar iron Agar showed alkaline slant and acid butt with abundant H<sub>2</sub>S and gas production<sup>4</sup>. The isolate was there after reconfirmed as *Salmonella* spp. by Vitek 2 system along with the MIC values at K.M.C, Mangalore. The strains agglutinated with *Salmonella* polyvalent (A-E) and *Salmonella* (O : 4) antisera (King's Institute of Preventive Medicine, Guindy, Chennai). Both the isolates from blood and CSF showed similar antibiogram pattern on testing by standard disk diffusion and MIC methods as per Clinical laboratory Standards Institute guidelines. The organism was identified as *Salmonella enterica* serotype Paratyphi B.

#### Discussion :

*Salmonella* along with other serotypes is commonly

associated with bacteraemia and has predilection to invade the blood stream.<sup>2</sup> Neonates are at particular risk of infection because of relatively reduced gastric acidity and peristalsis<sup>5</sup>. The sources of infection have been related to the use of contaminated medications, diagnostics, and blood products<sup>6</sup>. As the infant at the hospital was breast fed, the direct food borne transmission was unlikely. The possible sources may include contaminated clothes or bathing facilities for the newborn. The history of the child birth indicates it to be born in a rural hospital. The spread of infection may have occurred by baby-to-baby transmission or via family members and/or through hospital staffs<sup>7</sup>. The isolated strains showed the following antibiogram pattern by standard disk diffusion method. The strains were sensitive to Ceftriaxone, Cefepime, Cotrimoxazole, Imipenem and MIC values obtained were Meropenem < 0.25µg, Ertapenem < 0.5µg, Moxifloxacin 0.5µg, Cefepime < 1 µg, Ceftriaxone < 1µg, Imipenem <1µg, Tigecycline 1µg, combination of Ampicillin and Sulbactam < 2µg and Cotrimoxazole < 20µg. The isolate was resistant to Gentamycin > 1µg, Ampicillin >2µg, Amikacin > 2µg, Tobramycin. >1µg, Cefazolin >4µg and Aztreonam > 32µg.

Summary: Our patient was a four month old infant which itself is the predisposing factor that increases the risk of *Salmonella* bacteraemia leading complications such as septicemia and neonatal meningitis.<sup>8</sup>

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