Case Report

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Case Report: Neurological Sequels in Infant with Salmonella Meningitis

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ABSTRACT

Salmonella meningitis in infant was reported in few cases worldwide [1-4]. All reported cases associated with increased morbidity and mortality.

The American Academy of Paediatrics (AAP) recommends that Salmonella meningitis patients should be treated for four weeks or three weeks after sterilisation of CSF even if there is a response to medications to prevents relapse [10].

Keywords: Salmonella, Neonate, Menengitis

Introduction

Salmonella meningitis in infant was reported in few cases worldwide [1-4]. All reported cases associated with increased morbidity and mortality. In salmonella meningitides mortality rate was up to 40% mainly long term neurological sequels including including seizures, hydrocephalus, subdural effusions, empyema, ventriculitis, hemorrhage and abscess [5-7].

The diagnosis of *Salmonella typhi* is made only by growth of the organism in blood culture, as Serum Widal test is not helpful in diagnosis [8].

Third-generation cephalosporin are the recommended antibiotics and the therapy should be prolonged for a minimum of three weeks in patients with Salmonella meningitis [9].

The American Academy of Paediatrics (AAP) recommends that Salmonella meningitis patients should be treated for four weeks or three weeks after sterilisation of CSF, even if there is a response to medications to prevents relapse [10].

Case Presentation

A 40 days old baby girl, preterm 32 weeks gestational age, outcome of emergency caesarian section as mother had three previous scar. Admitted for 10 days in the neonatal intensive care and discharge in good condition.

Presented to emergency department at age of 32 days old with fever, planned for full septic work-up investigations but parents absconded, later after 8 day presented with excessive crying and decreased activity. No fever, vomiting or abnormal movement. Normal bowel motion.

Examination: Afebrile baby, irritable, full anterior fontanels, normal other systemic examination.

Investigations

Lab Requested	First Day Result	Resut upon Discharge
CSF-Protien	6.89 g/dl [0.15-0.45]	3.49g/l
CSF-Cells	295 cell /ul [0-30]	9 cell/ul
CSF-Sugar	1.18 [3.33-4.44] mmol/L	0.8 mmol/l
CSF-Culture	No growth	No growth
Leucocytes Counts	5.7 [6-18]	$10.89*10^9$ / L
Platelets Counts	251 10^9/L [200-550]	$233*10^9$/L
CRP	119.79mg/dl	35 mg/dl
Ferritin	195ug/l [13-150]	
D Dimer	4.07ug/ml [0.00-0.50]	
Blood Culture	Salmonella enterica	No growth
Urine Culture	No growth	
Renal Function	Normal	Normal
Liver Function	Normal	Normal

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Stool Culture	No growth	
Immunoglobulins Level	Normal	
Whole Exome Sequencing (Blood)	No clinically relevant variants related to the described phenotype were detected	

Neonatal Head US

Findings: There Is Bilateral Distended Ventricles With hyperechogenic Structure Which Suggestive of hemorrhage, More Prominent on The Left Side Filling More Than 50% of the Ventricle in Keeping with Grade 3 Germinal Matrix hemorrhage. Figure 1.

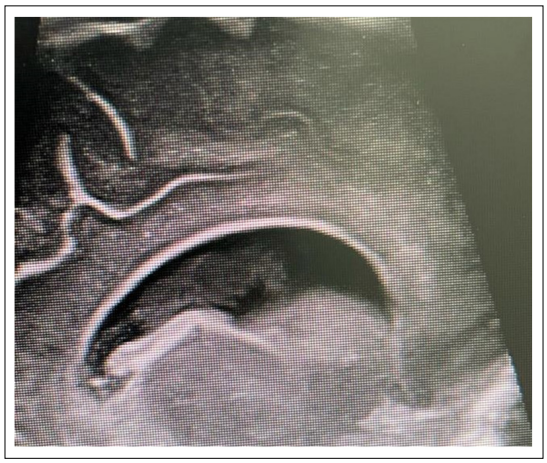

Figure 1: Ultrasound Brain

CT Brain

Impression Figure 2: There Are Scattered Hypodensities Bilaterally of White Matter More Prominent In Frontal Lobe Associated With Lateral Ventricle Dilated In Keeping With Hydrocephalus All Picture Suggestive To Related Infectious Processes.

No Evidence of Acute Intra or Extra-Axial Hemorrhage, No Collection for Further MRI evaluation.

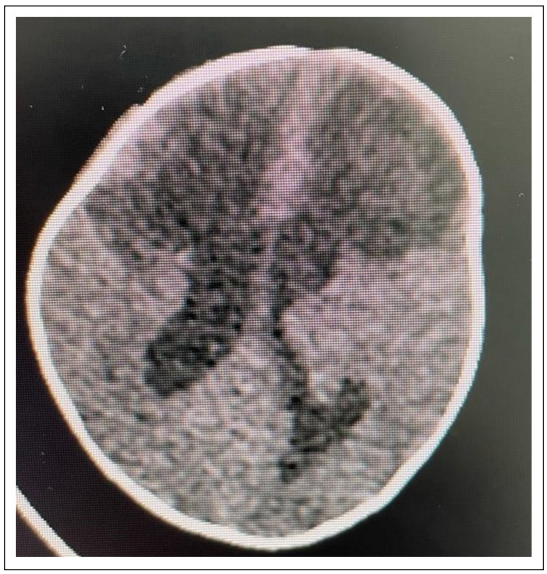

Figure 2: CT Brain

MRI Brain

Figure 3&4: Large bi-frontal brain abscesses with small bilateral subdural collection along the anterior aspect of the temporal lobes, associated with ventriculitis and thickend enhanced Dura around the cerebellum and cervical spinal cord, with partial thrombosis of the sagittal and transverse venous sinuses.

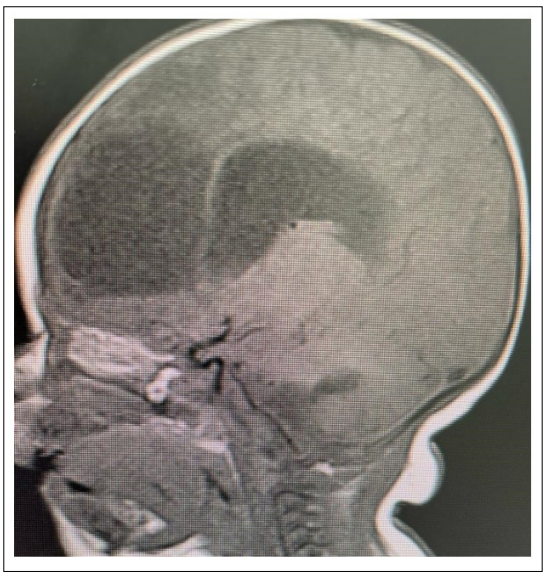

Figure 3: MRI Brain

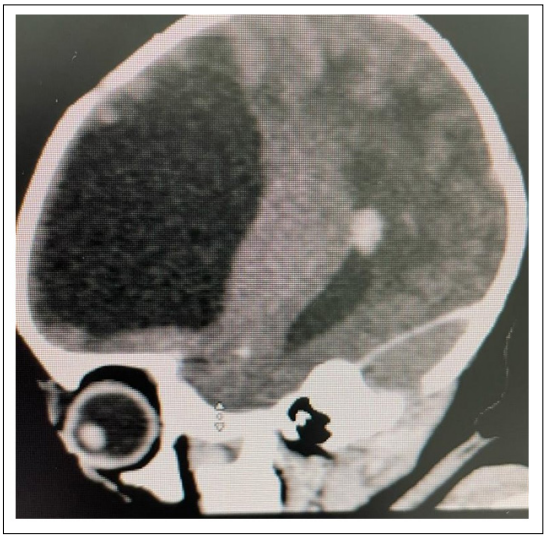

Figure 4: MRI Brain

EEG Report: EEG showed high amplitude waves generalized polymorphic slowing with no organized background and multifocal spikes

Conclusion: EEG record consist with partial seizure.

Course of Patient During Admission

She was admitted to Pediatric Intensive Care Unit (PICU) for 10 days with persistent convulsion, during admission she had progressive increase in head size, persistent fever.

Received antibiotics, anticonvulsant, Ventriculoperitoneal shunt was inserted, hemodynamic stabilization medications were given

Discharged from hospital on anticonvulsant medications and follow up.

Hearing assessment **Audiology Response Assessment**
TOAEs: Pass, Bilateral.
AABR: CND, poor connection.

Literature

In developed countries Salmonella meningitis in acute bacterial meningitis was rarely reported (1%). However, in Africa and developing countries, Salmonella spp. account for 13% of cases of childhood bacterial meningitis [11].

Salmonella infections are usually gastrointestinal tract infections, but recently there has been an increasing concern on extra intestinal infections with Salmonellosis especially meningitis [12].

The source of infection with Salmonella is usually food, that linked to animal reservoirs, but sometimes nosocomial infection can be the source specially in neonatal wards [13].

Salmonella meningitis in infancy is very uncommon and it does not respond to the routine duration of empirical antibiotics for meningitis [14].

In India and Siri Lanka. cases of meningitis in an infant's due to Salmonella typhi with severe neurological complication were reported [15,16].

Bowe A, Fischer, et al, report an infant born to mother with diarrhea due to Salmonella who developed Salmonella sepsis and meningitis [17].

Conclusion

We reported a case of an infant with Salmonella meningitis with sever neurological sequels.

We report this rare case in a developed country to alert clinicians that Salmonella Typhi could contribute significantly as a possible etiology of bacterial meningitis in children as in developing countries.

Consent: Consent from the hospital was taken.

Conflict of Interest: The author declare no conflict of interest regarding publication of this paper

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