SHORT COMMUNICATION

Haemophilus influenzae type B meningitis with subdural hygroma

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ABSTRACT

After the introduction of *Haemophilus influenzae* conjugate vaccine, it is uncommon to see culture-positive cases of invasive *H. influenzae* disease with complication. It is one of the etiological agents in acute bacterial meningitis in childhood. This case of culture-positive *H. influenzae* type B meningitis with subdural hygroma as unusual neurological sequelae of Haemophilus type B invasive infection highlights the need of timely vaccination.

Key words: Bacterial meningitis, *Haemophilus influenzae* Type B (Hib), subdural hygroma

INTRODUCTION

Haemophilus influenzae meningitis is associated with high mortality and morbidity.[1,2,4] It kills 386,000 children each year globally[10] and causes substantial neurological sequelae in survivors.[3] Some of the sequelae associated with *H. influenzae* type B (Hib) invasive diseases are hearing loss and motor deficit,[5] making it a disease with public health importance. We present here a case of subdural hygroma following *H. influenzae* meningitis. Antibiotic interventionis not sufficient to prevent occurrence of sequelae in Hib meningitis patients, and timely vaccination is the need of the hour.

CASE REPORT

An eight-month-old child was admitted with complaints of respiratory distress, high-grade fever since two days, 3-4 episodes of vomiting, altered sensorium, irritability andone episode of generalized tonic clonic seizures.

On examination, fontanel was bulging and neck rigidity was present. Child's immunization history comprised of three doses of DPT and three doses of OPV. Other systemic examination was normal.

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Quick Response Code:

Website: www.jacmjournal.org

DOI: 10.4103/0972-1282.144741

In view of the respiratory distress, the child was intubated and mechanically ventilated. Dopamine was administered considering the shock. The child underwent computerized tomography (CT) scan, which was suggestive of meningitis with bilateral fronto-temporo-parietal subdural hygroma [Figures 1 and 2]. Examination of the cerebrospinal fluid(CSF) showed elevated proteins (160 mg/dl), decreased sugar level (15 mg/dl), total nucleated cells (158/cm^2), polymorphonuclear cells (55%) and lymphocytes (45%).

Blood culture by Bactec (BD Diagnostics, 9050) too was positive for Hib. The microbiological identification and antimicrobial sensitivity testing was done with VITEK II (bioMérieux, Marcy l'Étoile, France). Isolate was sensitive to Imipenem, Meropenem, Piperacillin+tazobactum, Ampicillin+sulbactum and Cefepime, and Piperacillin and resistantto Amikacin,Levofloxacin, Ceftazidime and Cotromoxazole. In view of the persistent fever and antibiotic susceptibility report, treatment was changed from Vancomycin and Ceftriaxione to Meropenem. The child was extubated on the 8th day of ventilation. But as stridor increased after extubation and sensorium gradually deteriorated, he was reintubated and repeat CT scan was done, revealing increased size of subdural hygroma. To avoid any further pressure effects due to subdural hygroma, bilateral parietal burr hole tapping was done,which reduced the pressure, thus improving the patient's condition. Recovery was uneventful. The patient was given Hib vaccine on follow-up visit.

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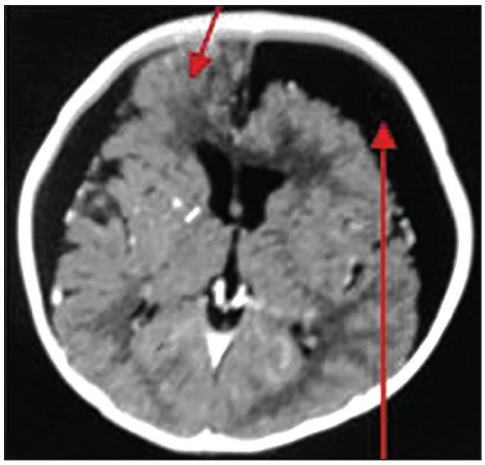

Figure 1: Axial CT Section-Subdural Hygroma

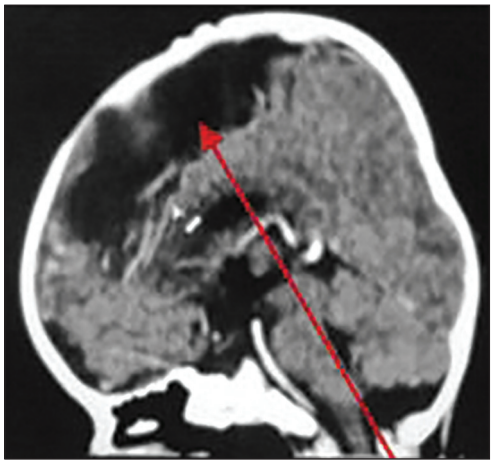

Figure 2: Sagittal C T Section-Subdural Hygroma

DISCUSSION

Failure to vaccinate on time and delayed treatment in Hib meningitis causes clinically evident sequelae.[3] Different neurological sequelae reported are hearing loss, vision loss, motor delay, seizures and cognitive delay.[5] Risk of neuropsychological sequelae with Hib meningitis is 25%.[5] One African study depicted 4-44% risk of neuropsychological sequelae among infected patients, 2-26% risk for hearing loss, 1-3% for vision loss, 2-32% for motor delay,2% for seizures and 2% for cognitive delay.

In India, Hib meningitis with subdural hygroma as a complication is not common perhaps due to under reporting.[5-7] Sequelae may develop inspite of antibiotic treatment. In this case too until antibiotic susceptibility report was available, progression of the disease was rapid with development of subdural hygroma, a neurological sequelae of meningitis. Subdural hygroma is a collection of fluid in the space between dura and arachnoid mater due to perivascular inflammation. When acute inflammation results in rupturing of arachnoid mater, CSF leak occurs creatinga subdural collection that exerts pressure on the brain. Cytokines like IL6 and tumor necrosis factor (TNF) are considered the causes of subdural hygroma. One retrospective study of 5 years investigating clinical features of Hib meningitis revealed subdural hygroma in 50% of cases.[11] In another study from Los Angeles Children's Hospital, subdural hygroma was seen in 21% cases; out of total 19 Hib meningitis cases, hygroma was seen in 4 cases.[12] Neuroimaging by MRI scan is more useful than CT scan but in our case it was not done.

It is also seen in child abuse, surgery for ventricular tumors, ventriculo-peritoneal shunts, and cerebral atrophy.[8,9]

To conclude, better reporting of Hib meningitis and neurological sequelae is necessary as it occursin many in spite of antibiotic treatment. Mere availability of a vaccine is not sufficient, but wide and timely coverage is needed to benefitthe pediatric age group.

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How to cite this article: Suryavanshi KT. *Haemophilus influenzae* type B meningitis with subdural hygroma. J Acad Clin Microbiol 2014;16:106-8.

Source of Support: Nil. **Conflict of Interest:** None declared.