GROUP B STREPTOCOCCUS NEONATAL MENINGITIS—LESS COMMON CAUSE OF NEONATAL MENINGITIS IN PAKISTAN AND DISPARITY BETWEEN CSF CULTURE AND OTHER PARAMETERS

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ABSTRACT

Neonatal bacterial meningitis is a devastating illness with significant mortality and morbidity. Incidence and etiology of neonatal bacterial sepsis and meningitis varies among developed and developing countries. We are reporting a case of 6 days old neonate who presented with fever, refusal to take feed and then followed by an episode of seizure activity. Laboratory parameters for complete sepsis screening including cerebrospinal fluid (CSF) and metabolic screening were absolutely normal for his age, but CSF culture revealed growth of group B Streptococcus (*Streptococcus agalactiae*). Patient was treated successfully without any morbid sequel.

Keywords: Group B Streptococcus, Meningitis, Neonate.

INTRODUCTION

Meningitis is more common in neonatal period. Microbial etiology varies among developed and developing countries. GBS, *E. coli*, L*isteria* and other gram negative bacilli are common pathogens in developed countries. In America 70% cases of early onset sepsis (EOS) or meningitis are due to GBS and E.Coli whereas among rare causes are Enterococci, Coagulase negative Staph and Staphylococcus Aureus[1,2]. In same study GBS was commonest organism in early and late onset meningitis and associated with seizures due to bacterial meningitis whereas *E. coli* was commonest among preterm neonates. But among developing world countries microbiology of neonatal meningitis varies geographically[3]. In Pakistan common culprits for sepsis and meningitis are *E. coli*, *Kleibsiella*, pseudomonas, serratia, salmonella, Staph aureus, Staph epidermidis, and Enterococcus species[4]. Aim of reporting this case is to highlight the point that CSF normal parameters do not exclude meningitis in a clinically suspected neonate.

CASE REPORT

A 6 days old male neonate presented with fever, irritability and poor feeding for the last 8 hours. He was delivered at term by spontaneous vertex delivery to a primigravida mother without any significant antenatal or birth problem. On examination, baby was irritable, febrile with temp 101^{0}F, heart rate was 150 beats/min, weight. 3.4 kg, FOC 36 cm, length 52 cm. Partial sepsis screening including complete blood count, C-reative proteins, blood culture, urine routine examination and culture were requested and patient was managed as a case of sepsis with antibiotics and supportive care. After 4 hours of hospitalization patient had an episode of tonic clonic seizure. Metabolic screening i.e. blood sugar, serum calcium and electrolytes were requested as laboratory investigations. Spinal tap was done and CSF sent for routine examination and culture. Patient started improving with treatment. Results of laboratory investigations including metabolic screening revealed no abnormality. CRP value was less than 6 mg/dl (normal ref. <6). CSF routine examination parameters were also normal for neonatal age. On 4th day of treatment we received report of CSF culture that revealed growth of GBS. Blood culture showed no growth of any organism. The patient was with appropriate antibiotic for 14 days symptoms fall after.

DISCUSSION

GBS is the commonest cause of early onset sepsis (EOS) in almost all developed countries and emerging etiology in developing world. GBS infection in neonates is classified into two types:

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(a) Early onset -generally presents within 24 hours after birth but can extend up to 6 days of life.

(b) Late onset –usually occurs at 4-5 weeks of age but can extend up to 90 days of life. It usually presents as bacteremia without a focus but can present as meningitis. Incidence of meningitis is more common with late onset sepsis than early.

There is a major variation in reported incidence of neonatal GBS disease in developing countries. It ranges from 0-3.06/1000 live births with variations within and between the geographical regions[3]. Rate of GBS colonization among pregnant women widely varies. It is from 5-30% in different regions of world. Different studies conducted in Pakistan have shown colonization rate of 8.5%, 4.5% and 30.9% respectively from Rawalpindi, Lahore and Peshawar[5]. The most important risk factor for early onset group B Streptococcal disease (EOGBSD) in neonates is maternal GBS colonization. The risk of neonatal colonization at birth is directly proportional to burden of maternal colonization. Rate of colonization of neonate born to colonized mother is up to 50%. Bushra et al[5] have documented 53% colonization rate in neonates born to GBS colonized mothers and is 60% reported from Iran[6]. Near about 1-3% of GBS colonized neonates suffer from invasive EOGBSD[7]. The neonates get colonized from their mothers by vertical transmission during passage through birth canal or by infected amniotic fluid aspiration and this transmission occurs after onset of labour or rupture of membranes. Risk factors for meningitis are prematurity, low birth weight, perinatal asphyxia, premature rupture of membranes, prolonged rupture of membranes, maternal intrapartum fever, urinary tract infection and septic delivery.

Clinical features are non specific and include-poor feeding, irritability, lethargy, fever, poor perfusion, respiratory distress, apnea, convulsions, hypothermia, vomiting, bulging fontanels and neck stiffness. Diagnosis is based upon clinical features and confirmed by CSF laboratory parameters. Typically CSF parameters are isolation of GBS from CSF, raised cell count (usually >1000/cmm and mainly neutrophils), raised proteins (>150 mg/dl in preterm and >120 mg/dl in term) and decreased glucose (<20 mg/dl in preterm and<30 mg/dl in term)[8,9]. It is of utmost importance, to remember that a normal CSF cell count, protein and glucose levels does not exclude meningitis[10]. This point is again highlighted in our case report where CSF parameters were absolutely normal and it was CSF culture that revealed GBS growth. If patient is already on antibiotics then CSF culture yield is decreased but in this group PCR is more helpful.

This case is reported to highlight that GBS neonatal septicemia/ meningitis does exist in our social setup and not exclusively a disease of western world. Moreover normal CSF parameters do not exclude meningitis and we must wait for report of CSF culture, in a clinically suspected case of neonatal meningitis.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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