

A STUDY OF PREVALENCE OF MENINGITIS IN NEONATAL SEPSIS AT A TERTIARY CENTRE OF CENTRAL INDIA

Dr. Kewal Kishore Arora¹, Dr. Gaurav Mogra², Dr. Renu Saroha³, Dr. Apurva Kawdiya⁴, Dr. Harsha Kumawat⁵

¹Associate Professor, ²Assistant Professor, ³Resident, ⁴Assisatant Professor, ⁵Assistant Professor
Division of Neonatology, Department of Pediatrics and adolescent medicine, Sri Aurobindo Medical
College and Postgraduate Institute, Indore, Madhya Pradesh

Corresponding author: Dr. Gaurav Mogra

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ABSTRACT:

Background: Neonatal sepsis is one of the most common causes of neonatal mortality. The present study was conducted to find out prevalence of meningitis in neonates with EOS and neonates with LOS. Study also aimed to find prevalence of meningitis in blood culture positive sepsis.

Materials and method: the present retrospective study was conducted among 125 neonates at Division of Neonatology, Department of Pediatrics and adolescent medicine, Sri Aurobindo Medical College and Postgraduate Institute, Indore, Madhya Pradesh, India between June 2021 to June 2022. Neonates with sepsis in whom lumbar puncture was not done were excluded from study. Data of all neonates who got admitted in past 1 year was collected. Infant with either sepsis screen positive or blood culture positive were considered to have neonatal sepsis. Neonates in which lumbar puncture was not performed due to any reason were excluded. Meningitis was defined if CSF protein is more than 150 and 180 in term and preterm infant respectively or CSF cell count was more than 20 or CSF culture positive.

Results: We have total 162 infants with sepsis out of which LP was not performed in 37 infants. Out of remaining 125 infants 64 had EOS and 61 had LOS. 18 infants with EOS and 23 with LOS had blood culture positive. 2 infants with EOS had meningitis (culture negative) and 7 with LOS had meningitis (3 with CSF culture positive and 4 with CSF culture negative). Prevalence of meningitis was 3% and 11% in EOS and LOS.

Conclusion: Performing lumbar puncture in all the neonates with sepsis need for evaluation.

Keywords: Incidence, late-onset sepsis, lumbar puncture, meningitis.

Introduction

Neonatal sepsis is a clinical syndrome characterized by signs and symptoms of infection with or without accompanying bacteremia in first month of life. Sepsis is one of the most common causes of neonatal mortality globally. It's classified into two types, depending on onset of symptoms. Early onset sepsis (EOS), presents within 72 hours of life & late onset sepsis (LOS), presents after 72 hours of life. Incidence of meningitis in neonates with EOS is 30% and in LOS is 80-90%. In EOS, lumbar puncture (LP) is indicated in presence of positive blood culture or if clinical picture is consistent with sepsis. In LOS, LP is indicated in all neonates prior to start of antibiotics. Kaul et al. reported 22.5% incidence of meningitis in neonates with suspected clinical sepsis in a tertiary care referral neonatal unit in North India. Two other studies from North India and Central India reported approximately 17% incidence of meningitis in neonates with LOS.

Objectives

1. To find out prevalence of meningitis in neonates with EOS.
2. To find out prevalence of meningitis in neonates with LOS.
3. To find prevalence of meningitis in blood culture positive sepsis.

Methodology

Study design- Retrospective study

Sample size- 125

Study place- Division of Neonatology, Department of Pediatrics and adolescent medicine, Sri Aurobindo Medical College and Postgraduate Institute, Indore, Madhya Pradesh, India

Study period- June 2021- June 2022

Inclusion criteria- Neonates with sepsis (sepsis screen positive or blood culture positive)

Exclusion criteria- neonates with sepsis in whom lumbar puncture was not done

We collected data of all neonates who got admitted in past 1 year. Infant with either sepsis screen positive or blood culture positive were considered to have neonatal sepsis. Neonates in which lumbar puncture was not performed due to any reason were excluded. Meningitis was defined if CSF protein is more than 150 and 180 in term and preterm infant respectively or CSF cell count was more than 20 or CSF culture positive.

Results

We have total 162 infants with sepsis out of which LP was not performed in 37 infants. Out of remaining 125 infants 64 had EOS and 61 had LOS. 18 infants with EOS and 23 with LOS had blood culture positive. 2 infants with EOS had meningitis (culture negative) and 7 with LOS had meningitis (3 with CSF culture positive and 4 with CSF culture negative). Prevalence of meningitis was 3% and 11% in EOS and LOS.

Discussion

Traditionally it has been described in the literature that the incidence of meningitis is 30% and 80-90% in EOS and LOS respectively. Our study suggested that the prevalence of meningitis is 3% and 11% in EOS and LOS, which is very less as compared to other studies. Similar observational studies from Kenya, Brazil, and Asia reported the incidence of meningitis in neonates with LOS were 17.9%, 17%, and 17.2%, respectively. However, Kaul et al. reported a higher incidence of meningitis (22.5%) compared to our study. The minor difference in the incidence can be attributed to the various epidemiological and geographical factors in community-acquired infection in late-onset variety of sepsis.

Bhagat et al. and Mehta reported 42.6% and 49.6% positive blood culture in neonates with meningitis, respectively.

This study demonstrated that a significant number of neonates with LOS have coexistent neonatal meningitis. A vigilant attitude toward the presence of postnatal risk factors associated with an increased risk of mortality in cases of suspected sepsis can be helpful for early treatment initiation.

Conclusion: Performing lumbar puncture in all the neonates with sepsis need for evaluation.

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