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RESEARCH ARTICLE

LISTERIA MONOCYTOGENES – A CASE REPORT

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ABSTRACT

Introduction: Listeria monocytogenes commonly causes food borne infection which is usually harmless but it causes infection in vulnerable group like pregnant women, neonates, elderly and patient suffering from malignant condition or having co-morbidities like COPD and diabetes or on immunosuppressive drug. Listeriosis in neonates can be classified as early onset or late onset. While the early onset disease is due to an in utero infection resulting in abortion, still birth, premature delivery or septicemia, the late onset form occurs due to exposure to organism during vaginal delivery or by cross infection within the nursery. **Case Report:** Here we report a 1 and ½ month old male child (weight-2.14kg) presented with fever, vomiting and diarrhea and diagnosed as severely malnourished with acute gastroenteritis with severe dehydration and shock with septicemia due to listeria monocytogenes and responded adequately to appropriate antimicrobial therapy. **Conclusion:** This case highlights the ultimate importance of early identification and timely application of appropriate antibiotics. We need to be more vigilant especially with high risk population with unknown case of fever. This case shows that it is important not to reject "gram positive bacilli" as contaminants without careful examination and correlation with clinical history of the patient.

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INTRODUCTION

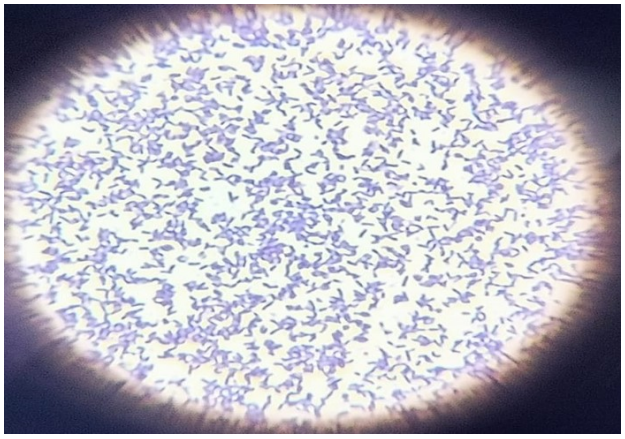
Listeria monocytogenes is an aerobic and facultative anaerobic, non-sporing Gram positive bacilli showing tumbling motility at 20-25°C and non-motile at 35-37°C with incubation period of 3-4 weeks with range of 3-90 days.[1]It was first described morphologically by Murray and associates[2] in 1926. Listeria mainly causes infection in vulnerable groups like pregnant women and their offsprings, the elderly, and patients suffering from malignant conditions or debilitating diseases such as cirrhosis or diabetes mellitus, or those on immunosuppressive therapy. Even with the appropriate antibiotic treatment it has a high mortality rate of 20-30%[3]. Reports of listeriosis from India are less either because of its rarity, failure to recognize the bacterial growth, improper isolation techniques or lack of awareness. Due to its morphological resemblance with diphtheroid species on direct smear, *L.monocytogenes* could be regarded as a contaminant in the laboratory and could be easily missed.

CASE REPORT

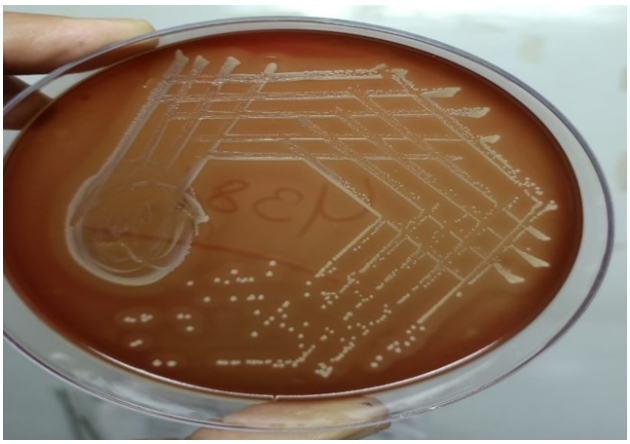
A 1 and ½ month old male child(weight-2.14kg) was admitted in PICU with complaints of fever, vomiting and diarrhea since 1 day. There was no h/o blood-tinged stool, projectile vomiting, refusal to feed, convulsions or rash. H/o past hospitalization in our hospital(NICU) immediately after birth for prematurity with ELBW(Extremely Low Birth Weight) of 1kg.The child was born preterm(34+/-2 weeks) by LSCS (indication-Premature rupture of membrane) and admitted in NICU for 15 days. H/o of faculty feed with diluted goat's milk along with breast feeding since 10 days.

On examination the child was severely dehydrated with sunken eyes, lethargic and capillary refill time > 30 sec. The child was febrile, tachypnea with cold peripheries, feeble pulse with HR-170 beats per minute and BP-101/43 mmHg. On examination of respiratory system, chest bilaterally clear. There was no evidence of purpura, rash or any signs of meningeal irritation. A diagnosis of severe malnutrition with acute gastroenteritis with severe dehydration and shock was made and the child was immediately started on fluid replacement therapy along with iv antibiotics ceftriaxone 10 mg 12th hourly after sending relevant blood investigations. Complete blood count showed anemia (Hb-8.3 g/dl), raised TLC(21200 cells/mm^3). C-reactive protein was positive, serum electrolytes and LFT were within normal limit. KFT was deranged(S.creatinine-1.42, BUN-97), MP-negative, Dengue-negative, WIDAL- negative. Patient responded to fluid therapy and was out of shock but fever still persisted. On day 2 of admission blood culture flagged positive. Gram's staining showed gram positive short, non-sporing bacilli resembling diphtheroid. Based on Gram's staining it was thought to be GPB contaminant but considering the clinical history and status of the patient we proceeded to isolate and identify this aerobic GPB and a request for second blood culture was also sent. Subculture on Blood agar and MacConkey agar and incubated for 24 hours at 37°C. On BA moderate growth of small, round, smooth translucent colonies with beta hemolysis seen and no growth on MAC plates. Gram staining of the colonies from BA plate also showed gram positive short, non-sporing bacilli resembling diphtheroid. Tumbling motility was demonstrated in nutrient broth incubated at 25°C and in nutrient broth incubated at 37°C the organism was non-motile. The isolate was positive for catalase and esculin hydrolysis. CAMP (Christie, Atkins and Munch-Peterson) test using beta hemolytic strain of Staphylococcus aureus was

positive.The isolate was identified as Listeria monocytogenes and antimicrobial susceptibility testing (AST) was performed by Kirby Bauer disk diffusion technique and zone of inhibition was interpreted as per CLSI guidelines M45[4]) and EUCAST guideline[5] The isolate was identified as Listeria monocytogenes and found sensitive to ampicillin, amoxycillin, gentamicin, chloramphenicol and resistant to ceftriaxone, cotrimoxazole. After the culture and sensitivity report he was switched to iv ampicillin along with gentamicin to which the child responded and within 24 hours he became afebrile. The child was discharged after 8 days with full recovery and on oral amoxicillin for two weeks.



Gram's staining-Gram Positive short, non-sporing bacilli resembling diphtheriod



On Bolld Agar-Small, round, smooth translucent colonies with beta hemolysis seen

The isolate was positive for catalase and esulin hydrolysis

CAMP test

DISCUSSION

Listeria monocytogenes infection are comparatively rare but fatal in 20-30% especially in high risk subjects. In this case predisposing underlying condition with source of infection was identified as - malnourished infant with h/o faculty feed with goat's milk and birth history of preterm delivery with ELBW. This disease not only tends to have wide clinical spectrum but now there are studies reporting listeriosis even in immunocompetent children[6]. In India cases of neonatal listeriosis are usually under reported. In a prospective study done in 1981 prevalence of listeriosis was found to be 0.2% among total number of birth and 2.2% among meconium stained babies[7]. Recent report from sub Himalayan belt and other areas of India suggestive of listeriosis being more prevalent than it was previously thought[8,9]. Furthermore its morphological resemblances with diphtheroid can be confusing[10] and resulting in delay of diagnosis or worst be missed as contaminants especially in resource limited settings where RT-PCR and serological tests for listeria are not available.

CONFLICT OF INTEREST: No conflict of interest.

ABBREVIATION

GPB – Gram Positive Bacilli
BA – Blood Agar
MAC – Macconkey Agar
ELBW- Extremely Low Birth Weight
LSCS- Lower Segment Caeserian Section
TLC- Total Leucocyte Count
LFT – Liver Function Test
KFT – Kidney Function Test
NICU – Neonatal Intensive Care Unit

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