

A Study on Clinical Profile of Children Aged Between 5 to 15 Years with Acute Systemic Infections Attending a Tertiary Care Hospital in West Bengal

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ABSTRACT

Background: Acute systemic infections are a major cause of hospitalization and morbidity in children, particularly in developing countries. Understanding the clinical profile helps improve early diagnosis and treatment outcomes. Objective: To assess the clinical presentation, demographic distribution, and risk factors associated with acute systemic infections in children aged 5–15 years attending a tertiary care hospital in West Bengal. Methods: A hospital-based observational cross-sectional study was conducted among 36 pediatric patients with confirmed acute systemic infections. Clinical data, laboratory findings, and potential risk factors were recorded and analyzed. Results: The most common symptoms were fever (100%), vomiting (47.2%), rash (36.1%), and altered sensorium (22.2%). The leading diagnoses included dengue (25%), typhoid (22.2%), and leptospirosis (13.9%). Key risk factors included poor hygiene, exposure to contaminated water, and lack of immunization. Conclusion: Acute systemic infections in school-aged children present with varied clinical features, often overlapping. Identification of risk factors such as poor sanitation and lack of vaccination is vital for prevention. Early recognition and supportive care can significantly reduce morbidity.

KEYWORDS: Infection, Care.

INTRODUCTION

Acute systemic infections in children, such as dengue, typhoid, malaria, and leptospirosis, contribute significantly to pediatric hospital admissions in India. Children aged 5–15 are vulnerable due to environmental exposure and incomplete immunity. These infections often present with non-specific symptoms, leading to delayed diagnosis[1].

In India, neonatal sepsis is a significant health concern, contributing to a substantial number of newborn deaths. While the incidence of sepsis varies, it's generally reported to be higher in India compared to developed countries. The prevalence of culture-proven sepsis ranges from 8.6 to 34 per 1,000 live births[2]. Key aspects of neonatal sepsis in India: High Mortality:

Neonatal sepsis is a major cause of neonatal mortality, accounting for a significant proportion of newborn deaths. Incidence: While the overall incidence of suspected sepsis is around 8-10%, culture-positive cases show a range of 9-34 per 1,000 live births[3-8]. Early vs. Late Onset:

Sepsis can be categorized as early-onset (occurring within the first 72 hours of life) or late-onset, with different causative organisms and transmission patterns. Antimicrobial Resistance A concerning trend is the increasing antimicrobial resistance among common pathogens causing neonatal sepsis, making treatment more challenging. Risk Factors:

Low birth weight, prematurity, maternal infections (like UTI and PROM), and prolonged rupture of membranes are significant risk factors for neonatal sepsis[9-11].

Diagnosis: Diagnosis relies on a combination of clinical suspicion, laboratory tests (like blood cultures), and risk factor assessments. Treatment: Antibiotic therapy remains the mainstay of treatment, but the emergence of antibiotic-resistant strains necessitates careful antibiotic selection and infection control measures. Specific

Statistics and Findings: In one study, 17.87% of neonates admitted to a Neonatal Intensive Care Unit (NICU) had culture-proven sepsis. Another study reported the prevalence of septicemia, pneumonia, and meningitis as 6%, 1.5%, and 0.7% respectively in a NICU setting. A systematic review highlighted that 62% of infections in South Asia occur in the first 72 hours of life. The case fatality rate for neonatal sepsis in India ranges from 25% to 65%.Addressing the Issue: Strengthening Infection Control:

Strict infection control practices in hospitals and communities are crucial to prevent the spread of infection. Rational Antibiotic Use: Judicious use of antibiotics is essential to minimize the development of resistance[12]. Early Diagnosis and Management:

Prompt diagnosis and appropriate treatment are critical to improve outcomes. Research and Surveillance: Continued research into the epidemiology, microbiology, and risk factors of neonatal sepsis is needed to guide interventions[13]

In West Bengal, outbreaks of vector-borne and waterborne infections are frequent due to climatic and socio-economic conditions. A better understanding of the clinical profile and associated risk factors in this age group can guide effective triage, diagnosis, and public health interventions.

METHODS

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 36 patients in the department of Paediatrics, at a tertiary care centre, from April / 2021 to October/2021

Total 36 participant were approached to project among them No one were excluded in this study and Total 36 Confirmed cases were included on the basis of fulfilling of the eligibility criteria.

The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination.

Study Design:

- Cross-sectional observational study

Study Setting:

- Paediatric department of a tertiary care hospital in West Bengal

Study Duration:

- 6 months

Sample Size:

- 36 children aged 5 to 15 years presenting with acute systemic infection

Inclusion Criteria:

- Children aged 5–15 years
- Clinical and/or laboratory confirmation of acute systemic infection

Exclusion Criteria:

- Chronic systemic diseases
- Known immunodeficiency

Data Collection:

- Detailed history and physical examination
- Laboratory tests (CBC, Widal, dengue serology, malaria smear, liver/kidney function tests)
- Assessment of risk factors (hygiene, water source, vaccination status)

Statistical Analysis:

- Data entered in MS Excel and analyzed using SPSS v21
- Descriptive statistics and chi-square test ($p < 0.05$ significant)

RESULTS

In this study we found that Acute systemic infections is associated with demographic profile of patient. 38.9 % of paediatrics are suffered of Acute systemic infections their age group is 5-8 years followed by 9-12 years age group Its prevalence 36.1% .

Male are more prone to suffered of Acute systemic infections as compared to female its prevalence 58.1% .71.4% Acute systemic infections were equally predominance amon vaginal rural and urban residence (Table 1)

Demographic Profile Table 1

Characteristics	Frequency (n=36)	Percentage (%)
Age Group		
5–8 years	14	38.9
9–12 years	13	36.1
13–15 years	9	25.0
Gender		
Male	21	58.3
Female	15	41.7
Residence		
Urban	18	50.0
Rural	18	50.0

Clinical Presentation table 2

Symptoms	Number of Cases	Percentage (%)
Fever	36	100
Vomiting	17	47.2
Rash	13	36.1
Headache	11	30.6
Altered Sensorium	8	22.2
Abdominal Pain	12	33.3

Final Diagnoses table 3

Diagnosed Infection	Cases (n=36)	Percentage (%)
Dengue	9	25.0
Typhoid	8	22.2
Leptospirosis	5	13.9
Malaria	4	11.1
Viral Hepatitis	3	8.3
Septicemia	3	8.3
Others (nonspecific)	4	11.1

Risk Factors Table 4

Risk Factors	Present in Infection Group (n=36)	Percentage (%)	p-value
Poor sanitation	23	63.9	0.01*
Use of untreated water	19	52.8	0.03*
Incomplete vaccination	15	41.7	0.04*
Recent travel to endemic area	11	30.6	0.08
Low socioeconomic status	21	58.3	0.02*

*Statistically significant (p < 0.05)

DISCUSSION

This study emphasizes the high burden of systemic infections among children aged 5–15 in West Bengal. Fever was universal, while vomiting and rash were common initial signs. Dengue and typhoid were the most prevalent infections, reflecting endemicity and environmental exposure[14-18]

In India, several demographic factors significantly influence the occurrence and impact of systemic infections in newborns (neonatal sepsis). These include prematurity, low birth weight, male gender, outborn status (born outside a hospital), and maternal factors like infection during pregnancy, prolonged labor, and premature rupture of membranes. Additionally, socioeconomic status, particularly low income, and inadequate access to quality healthcare, including antenatal and postnatal care, play a crucial role in the susceptibility and severity of neonatal infections[19-21].

In this study we found that Acute systemic infections is associated with demographic profile of patient. 38.9 % of paediatrics are suffered of Acute systemic infections their age group is 5-8 years followed by 9-12 years age group Its prevalence 36.1% .

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Detailed Demographic Factors: Gestational Age and Birth Weight:

Preterm neonates (born before 37 weeks of gestation) and those with low birth weight (<2.5 kg) are at higher risk due to their underdeveloped immune systems and increased vulnerability to infections. Gender: Studies suggest that male neonates may be more susceptible to sepsis, though the reasons for this are not fully understood[22]. Place of Birth:

Infants born outside a hospital (outborn) are at increased risk, possibly due to delayed or inadequate access to specialized care. Maternal Factors: Maternal infections during pregnancy, prolonged labor (>24 hours), premature rupture of membranes (>18 hours), and maternal fever are significant risk factors. Socioeconomic

Status: Lower socioeconomic status is associated with higher rates of neonatal sepsis, likely due to factors like inadequate nutrition, poor hygiene, and limited access to healthcare services. Maternal Literacy and Parity: Studies indicate that mothers with lower literacy levels and higher parity (number of previous pregnancies) may be associated with increased risk of neonatal infections[23-25].

Environmental Factors: Overcrowding, inadequate infection control measures in the neonatal intensive care unit (NICU), and poor hygiene practices can contribute to the spread of infections. Invasive Procedures: Use of invasive medical interventions like ventilation, catheterization, and intravenous medications, while necessary, can also increase the risk of infection in vulnerable newborns[26].

Specific Considerations for India: Rural-Urban Disparities: Neonatal sepsis rates and outcomes can vary significantly between rural and urban areas, with rural areas often experiencing higher rates due to factors like limited access to healthcare and poor infrastructure. Antibiotic Resistance: The emergence of antibiotic-resistant bacteria in India poses a significant challenge in managing neonatal sepsis, especially in rural areas where diagnostic facilities and access to appropriate antibiotics may be limited. Cultural and Social Practices: Certain cultural practices and beliefs related to childbirth and newborn care can also influence infection rates and outcomes[27].

Key risk factors included poor hygiene, unsafe drinking water, and incomplete vaccination—common issues in both rural and peri-urban settings. These findings are consistent with national data and WHO estimates for similar populations. A major limitation is the small sample size, limiting external validity. However, the study provides useful insights into early clinical patterns, which can assist in empirical management pending lab confirmation.

CONCLUSION

The clinical profile of children with acute systemic infections reveals consistent patterns, with fever being universal. Dengue and typhoid are major contributors in the region. Modifiable risk factors like sanitation, water safety, and vaccination play critical roles in infection susceptibility. Public health awareness on sanitation and hygiene Routine vaccination monitoring School-based health education Early triage and referral from primary to tertiary care.

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

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