International Journal of Contemporary Pediatrics
Seelam P et al. Int J Contemp Pediatr. 2026 Jun;13(6):932-935
https://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20261537

Original Research Article

Etiological spectrum and clinical outcomes of paediatric patients with fever and hepatosplenomegaly: a retrospective study from a tertiary care center

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Received: 16 March 2026
Revised: 15 April 2026
Accepted: 19 May 2026

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ABSTRACT

Background: Fever with hepatosplenomegaly is a common presentation in children. Etiologies range from infectious, hematological, malignancies and storage disorders. Early identification of underlying cause is crucial to reduce morbidity and mortality.
Methods: A hospital based retrospective observational study conducted in the Department of Paediatrics, Navodaya Medical College, Raichur for a duration of 6 months with sample size of 150. Children from 1 month - 18 years of age with medical records including laboratory tests indicating both fever and hepatosplenomegaly on clinical or radiological examination were included.
Results: The most common etiology was infectious (65%) including malaria (34.02%), dengue (28.88%), and enteric fever (19.58%), followed by hematological disorders (24.66%) and congestive (8%). Mean age was between 1 month and 5 years of age years (46%), with slight male predominance (58%).
Conclusions: Infections are the leading cause of fever with hepatosplenomegaly in children. A structured diagnostic approach can aid in early identification of serious conditions like leukemia or hemophagocytic lymphohistiocytosis (HLH).

Keywords: Fever, Hepatosplenomegaly, Infections, Etiology, Retrospective study

INTRODUCTION

Fever associated with hepatosplenomegaly is a frequent indication for referral and hospitalization in pediatric practice. Hepatosplenomegaly reflects systemic disease involvement and is seen in infections, hematological malignancies, storage disorders, and immune dysregulation syndromes. Infections remain the most common cause worldwide, particularly in tropical regions.[1,2] Clinical outcomes vary drastically where it can be a self-limiting viral illness to life threatening condition.

Indian studies have consistently demonstrated that malaria, dengue and enteric fever constitute a major proportion of cases presented with fever and hepatosplenomegaly.[3-5] Hematological malignancies, particularly thalassemia, acute leukemias and lymphomas, were important non-infectious causes and often presented with prolonged fever, pallor, and cytopenias.[6-8]

Hyperinflammatory conditions such as hemophagocytic lymphohistiocytosis and macrophage activation syndrome were increasingly recognized in children presenting with fever, hepatosplenomegaly, and organ dysfunction, despite established diagnostic criteria many cases probably remain unrecognized and are associated with high mortality if diagnosis is delayed.[9]

The objective of this study is to know the clinical spectrum, clinical profile and outcome of children

presenting with fever and hepatosplenomegaly and to also emphasize the need of structured diagnostic approach for early identification of serious illnesses.

METHODS

Study design

The study design was a retrospective observational study.

Study setting

The study was conducted at Department of Paediatrics, Navodaya Medical College and Research Centre, Raichur.

Study duration

The study duration was six months retrospective review of records from July 2024 to December 2024.

Study population

Children aged 1 month to 18 years admitted with fever and hepatosplenomegaly.

Inclusion criteria

Children aged 1 month to 18 years, documented fever and confirmed hepatosplenomegaly clinically or radiologically and availability of complete medical records were included.

Exclusion criteria

Children with incomplete medical records, children with prior chronic disorder like chronic liver disorder or malignancy and readmission of same patient during the study period were excluded.

Sample size

Based on study by Champatiray et al, where infectious causes accounted for 50%, where Z=1.96 for 95% confidence interval and p=0.5, d=0.08.[5]

$$n = (Z^2 \times p \times (1-p))/d^2$$

$$n = (1.96)^2 \times 0.5 \times 0.5/0.0064 = 150$$

$$Sample\ size: 150\ children$$

Data collection

Medical records were obtained from hospital health records and data collected included demographic details, signs and symptoms, laboratory investigations-CBC, PS, LFT, bone marrow cytology, radiology imaging, and final diagnosis and outcome.

Methodology

Ethical approval was obtained from the institutional Ethics Committee before starting the data collection. The study population was selected from medical record department and pediatric inpatient record register who had documented fever and hepatosplenomegaly from July 2024 to December 2024 duration. The retrieved medical records were filtered based on inclusion and exclusion criteria. After filtering the case records data extraction was done by using a proforma which contained demographic data, clinical features, on examination findings, radiological and laboratory findings, final diagnosis and outcome.

The collected data was entered into Microsoft excel sheet. Statistical analysis was done using statistical package for the social sciences (SPSS) version 23, descriptive statistics were used for demographic and clinical variables, Chi-square test was used to know association between clinical findings and outcomes. A $p<0.05$ was considered clinically significant.

RESULTS

A retrospective evaluation of 150 medical records from children aged 1 month to 18 years with fever and hepatosplenomegaly was performed. The demographic distribution is predicted to show a predominance with 69 children in the 1 month to 5-year-old age group (46%) (Figure 1) and with a small male predominance (58%) (Figure 2).

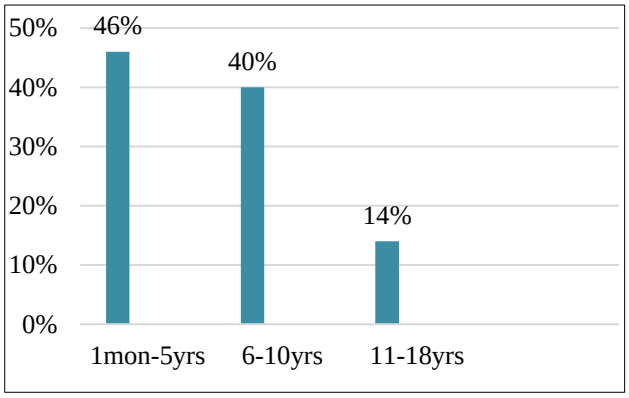

Figure 1: The demographic distribution shown a predominance with 69 children in the 1 month to 5-year-old age group (46%).

Among the clinical features pallor or anemia is seen in 119 children (79%) followed by fever in 117 children (78%), jaundice in 58 children (39%), abdominal distension in 56 children (37%), lymphadenopathy and edema were present in few degrees (Figure 3).

Based on medical record data, the most common aetiology was - infectious cause in 97 children (65%) which included malaria in 33 children (34.02%), dengue in 28 children

(28.88%), enteric fever in 19 children (19.58%), viral hepatitis in 11 children (11.34), tuberculosis in 6 children (6.18%) followed by haematological diseases in 37 children (24.66%) which included thalassemia in 19 children (51.35%), haemolytic anemias in 9 children (24.32%), leukemias in 4 children (16.21%), sickle cell anemia in 4 children (16.21%) and hereditary spherocytosis in 2 children (5.4%).

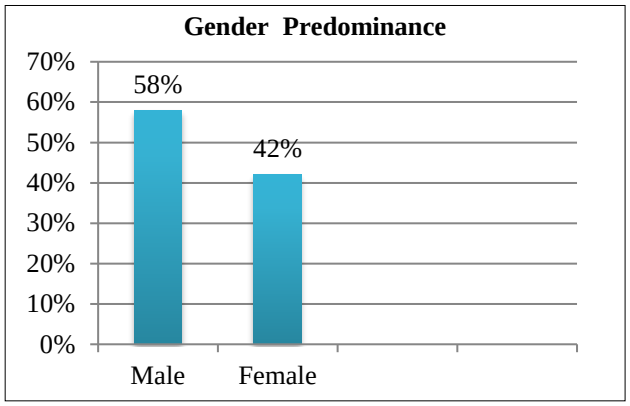

Figure 2: The demographic distribution is predicted to showing small male predominance (58%).

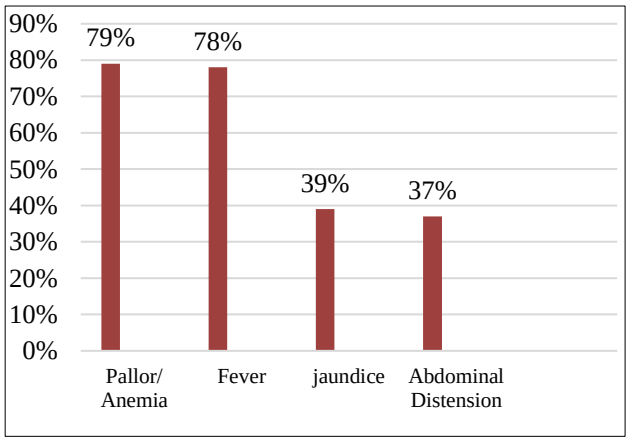

Figure 3: Clinical outcomes in patients with hepatosplenomegaly where anemia and fever were the major clinical presentations.

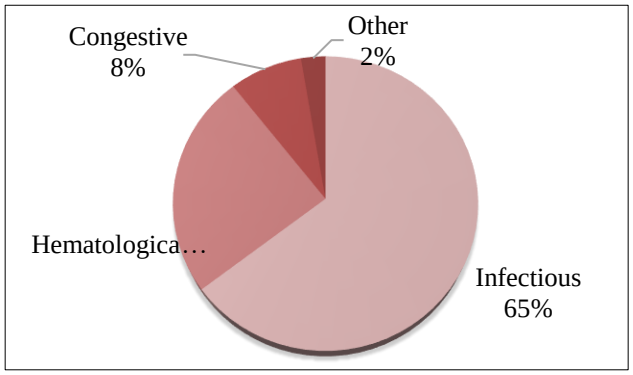

Figure 4: Etiologies associated with fever with hepatosplenomegaly.

Congestive cause in 12 children (8%) which included CCF in 8 children (66.66%), infective endocarditis in 4 children (33.33%) and other conditions like hemophagocytic lymphohistiocytosis in 2 children, macrophage activation syndrome in 1 child and systemic lupus erythematosus in 1 child (Figure 4 and Table 1).

Table 1: The etiological spectrum for fever with hepatosplenomegaly in 150 cases.

Characteristics	N	%
Infections	97	65
Malaria	33	34.02
Dengue	28	28.88
Enteric fever	19	19.58
Viral Hepatitis	11	11.34
Tuberculosis	6	6.18
Hematological	37	24.66
Thalassemia	19	51.35
Hemolytic anemia	9	24.32
Leukemias	4	16.21
Sickel cell anemia	4	16.21
Hereditary spherocytosis	2	5.4
Congestive	12	8
Congestive cardiac failure	8	66.66
Infective endocarditis	4	33.33
Inflammatory and connective tissue disorders	4	2.66
Hemophagocytic lymphohistiocytosis	2	50
Macrophage activation syndrome	1	25
Systemic lupus erythematosus	1	25

DISCUSSION

This study highlights infections as the most common cause of fever with hepatosplenomegaly in children, consistent with earlier Indian studies. Malaria and dengue remain significant contributors due to endemicity.[3-6] Fever is most commonly seen in infectious etiologies.

Hematological malignancies form an important portion of cases, emphasizing the need for early evaluation in children with prolonged fever and cytopenias. Bone marrow examination played a crucial role in these patients.[7]

Hepatosplenomegaly in children with thalassemia is expected due to extravascular hemolysis, extramedullary hematopoiesis and iron overload. But fever in thalassemia should alert us regarding secondary infections caused due to repeated blood transfusions.[8]

Hyperinflammatory syndromes, though less common, were associated with severe disease and poorer outcomes. the main difficulty in diagnosing these syndromes is due to low specificity of symptoms. Hence awareness of symptoms and diagnostic criteria for HLH/MAS is very critical for early diagnosis and initiation of treatment.[9]

The key determinants of the clinical outcome are based on duration of fever before hospital presentation, degree of hepatosplenomegaly and cytopenias. Early identification of the underlying etiology through a systemic approach is essential to reduce morbidity and mortality in children presenting with this clinical combination.

Limitations

This study was a retrospective study design, single center experience and require backup advanced laboratory investigations.

CONCLUSION

Fever with hepatosplenomegaly remains a common presentation in paediatric admissions. Infections like malaria, dengue, and enteric fever have been noted to be the major contributors, while haematological and other systems account for a smaller but clinically significant proportion. This study highlights that a step wise and systematic process of diagnosis aided by proper evaluation and investigations allows early detection of disease. By providing region specific data on etiological patterns and outcomes, this study advances current understanding and aids clinicians in prioritizing differential diagnosis, facilitating timely management, and optimizing resource utilization in similar tertiary care centres.

ACKNOWLEDGEMENTS

Authors would like to thank Navodaya Medical College Hospital and staff of department of pediatrics for their support to proceed with the study.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Seelam P, Pranam GM, Hirevenkanagoudar U, Chetty S. Etiological spectrum and clinical outcomes of paediatric patients with fever and hepatosplenomegaly: a retrospective study from a tertiary care center. Int J Contemp Pediatr 2026;13:932-5.