

CLINICAL FEATURES AND AETIOLOGY OF FEBRILE JAUNDICE AMONG PATIENTS ADMITTED IN A TERTIARY CARE TEACHING HOSPITAL IN KARNATAKA

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ABSTRACT

Background: Febrile jaundice is a clinically important condition that requires prompt diagnosis and timely management. Because its presentation varies widely and the underlying causes differ across regions, laboratory investigations are essential to establish the diagnosis. Understanding the geographic variation in the aetiology of febrile jaundice is crucial for developing appropriate diagnostic strategies and treatment protocols. The present study aims to assess the aetiology and clinical features of patients presenting with febrile jaundice. **Materials and Methods:** This observational study included 42 patients presenting with febrile jaundice done over a period of one year (June 2025 to May 2026) and admitted in the General Medicine ward of a Tertiary care hospital. Detailed clinical history and examination was done followed by routine laboratory test. Specific investigation including serological test, ultrasound and blood culture was done as needed to arrive at diagnosis. Findings were expressed in frequency and percentage. **Result:** The mean age of patients presenting with febrile jaundice in the present study was 47.3 ± 6.7 years with 66.7% males. Based on the clinical feature, the most common presentation was myalgia (76.2%), nausea/vomiting (50%), anorexia (42.8%) and headache (35.7%). Dengue was the most common aetiology of febrile jaundice in the present study contributing to 30.9% followed by enteric fever (19%), and scrub typhus (16.7%). Other causes were leptospirosis, malaria, hepatitis A and E, Klebsiella constituting to less than 10%. Complication seen were encephalopathy (9.5%), multi-organ dysfunction syndrome (9.5%), acute kidney injury (7.1%) and bleeding manifestation (7.1%). **Conclusion:** A wide spectrum infectious causes contributed to febrile jaundice. A comprehensive clinical history, environmental risk assessment combined with appropriate laboratory investigations is crucial for early diagnosis and management.

INTRODUCTION

Febrile jaundice is a common clinical presentation seen among those residing in tropical and subtropical countries, including India which is mostly infectious in origin. It is a diagnostic challenge due to the wide spectrum of infectious diseases and also non-infectious condition that can present with similar symptoms. The occurrence of fever along with jaundice often indicates a systemic involvement and occurs due to hepatocellular injury, cholestasis, hemolysis, or a combination of these mechanisms. Early detection of etiology is essential to plan specific treatment since some condition can be potentially life-threatening.^[1-4]

Systemic infections known to present with fever with jaundice and abnormal liver enzymes along with other systemic symptoms are typhoid fever, bacterial sepsis, dengue, malaria, leptospirosis, scrub typhus and acute viral hepatitis A, B and E. When fever is the major symptom, apart from jaundice, or if fever persists after onset of jaundice, search for other etiologies is needed. The prevalence of these conditions varies across the different geographical location depending on seasonal pattern and environmental conditions.^[5-7]

Symptoms of febrile jaundice can vary from mild self-limiting illness to severe multisystem disorder with complications of acute liver failure, coagulopathy, renal dysfunction, shock, and

multiorgan failure. Commonly clinical findings are fever, myalgia, icterus, headache, abdominal pain, nausea, vomiting, hepatomegaly, and altered liver function tests. Since most of these features overlap among the various etiologies, therefore establishing definitive diagnosis requires multiple laboratory investigations and serological testing. Previous studies from India have mostly demonstrated the etiological profile of febrile illnesses alone (d, e, f, g) with few studies focusing on febrile jaundice.^[2] Understanding the local disease pattern is important for timely diagnosis, and planning for implementing the public health measures. Karnataka is a tropical state having diverse climatic conditions with periodic outbreaks of vector-borne and water-borne diseases and is vulnerable to infections associated with febrile jaundice. However, there is paucity of data regarding the clinical profile and etiological spectrum of febrile jaundice among hospitalized patients in this region. A better understanding of the clinical features and underlying aetiology can assist in early diagnosis, better patient outcomes, and guide in framing institution-specific diagnostic and treatment protocols. The present study aims to describe the clinical profile and causes of febrile jaundice at a tertiary care hospital over a period of one year.^[8-13]

MATERIALS AND METHODS

Study Design and Setting: An observational study was conducted in the Department of General Medicine of a tertiary care teaching hospital during the period of June 2025 to May 2026 with the objective of identifying the aetiology and clinical features of patients presenting febrile jaundice.

Study Population: All patients having complaints of both fever and jaundice either at the time of presentation or developed the symptoms during the hospital stay were included in the study-based on inclusion and exclusion criteria.

Inclusion Criteria

- Patients of both sex and aged ≥ 18 years.
- Patients presenting with fever (body temperature $\geq 38^{\circ}\text{C}$ or history of fever within the preceding 7 days).
- Presence of clinical jaundice and/or serum bilirubin >1.5 mg/dL with or without Aspartate Transaminase (AST) and Alanine Transaminase (ALT) elevation.
- Patients willing to provide informed consent.

Exclusion Criteria

- Known chronic liver disease or cirrhosis.
- Hemolytic jaundice without evidence of infection.

- Obstructive jaundice due to gallstones or malignancy.
- Pregnant women.

Study procedure: Patient recruitment: Universal sampling of all patients fulfilling inclusion and exclusion criteria during the study period was included. A total of 62 patient with febrile jaundice were reported which was analyzed.

Data collection: A structured questionnaire with four sections was used to collect the following information.

Section 1: Sociodemographic details- This includes patients' information regarding age, sex, occupation, residence and socioeconomic status.

Section 2: Clinical history- In this section chief complaints on duration of fever and jaundice, presence of abdominal pain, pruritic, rashes, change in urine or stool colour, altered sensorium, history of travel, consumption of contaminated food or water, family history of similar complaints, drug history, presence of any co-morbidity etc.

Section 3: Clinical examination- The vital signs were documented along with the presence of icterus, pallor, lymphadenopathy, hepatomegaly, splenomegaly, ascites, encephalopathy etc.

Section 4: Laboratory investigation- Complete blood investigation was done including complete blood count, ESR, peripheral smear and platelet count. Biochemical test such as liver function test (bilirubin, AST, ALT, ALP and serum albumin), renal function test and random blood sugar was done. Additional investigation for specific diagnosis included viral hepatitis marker (HAV IgM, HBsAg, Anti-HCV, HEV IgM), Dengue NS1 antigen/IgM antibody, Leptospira IgM ELISA, Malarial rapid antigen test, Widal test/Typhidot, Scrub typhus IgM ELISA, blood culture and ultrasound abdomen (if needed).

Statistical Analysis: Data entry and analysis was done using Microsoft excel. The quantitative data were expressed in mean, standard deviation and range while qualitative data in frequency and percentage.

Ethical Consideration: Institutional ethics committee approval was obtained prior to the start of the study. Patient's informed consent was obtained before recruiting patient into the study and patient confidentiality was maintained.

RESULTS

The mean age of patients presenting with febrile jaundice in the present study was 47.3 ± 6.7 years with 66.7% males. Majority were from rural area (73.8%) and belonging to middle class family. [Table 1] The mean duration of fever reported by patients on the time of admission was 7.8 ± 3.4 days.

Table 1: Sociodemographic details of patients with febrile jaundice (N=42)

Variable	Frequency (n)	Percentage (%)
Age (in years)		
18-30	5	11.9
31-45	13	30.9

46-60	14	33.3
>60	10	23.8
Gender		
Male	28	66.7
Female	14	33.3
Residence		
Urban	11	26.2
Rural	31	73.8
Socioeconomic status		
Upper class	8	19.0
Middle class	19	45.2
Lower class	15	35.7

Based on the clinical feature, the most common presentation was myalgia (76.2%), nausea/vomiting

(50%), anorexia (42.8%) and headache (35.7%). Other clinical features are given in [Table 2].

Table 2: Associated features of patients with febrile jaundice (N=42)

Clinical Feature	Frequency (n)	Percentage (%)
Myalgia	32	76.2
Nausea/Vomiting	21	50.0
Anorexia	18	42.8
Headache	15	35.7
Abdominal Pain	10	23.8
Rash	7	16.7
Hepatomegaly	6	14.3
Splenomegaly	5	11.9
Altered Sensorium	5	11.9
Bleeding Manifestations	2	4.8
Others	3	7.1

Jaundice was detected on clinical examination only among 18 patients (42.8%) while remaining were mild or subclinical jaundice detected on laboratory investigation. The mean total bilirubin was 3.89 ± 2.1 mg/dl with direct bilirubin being 1.91 ± 0.9 mg/dl.

Based on the laboratory parameter most of the patients had normal haemoglobin (76.2%), white blood cell count (62.8%) and platelet count (83.2%). [Table 3]

Table 3: Laboratory findings among study participants (N=42)

Laboratory Parameter	Mean $\pm$ SD (Range)
Hemoglobin (g/dL)	12.2 ± 2.4 (6.5-14.3)
Total Leukocyte Count (/mm ³)	$10,821.2 \pm 6,547.2$ (3,450-18,360)
Platelet Count (/mm ³)	$1.67 \times 10^5 \pm 47000$ (50,000-4.6 x 10 ⁵)
Total Bilirubin (mg/dL)	3.89 ± 2.1 (1.4-25.8)
Direct Bilirubin (mg/dL)	1.91 ± 0.9 (1.1-2.5)
AST (IU/L)	342.9 ± 198.2 (29-4271)
ALT (IU/L)	237.4 ± 176.9 (27-3876)

Dengue was the most common aetiology of febrile jaundice in the present study contributing to 30.9% followed by enteric fever (19%), and scrub typhus (16.7%). Other causes were leptospirosis, malaria,

hepatitis A and E, Klebsiella etc. constituting to less than 10%. The diagnosis of two cases was not known despite all investigation done. [Table 4]

Table 4: Aetiology of patients with febrile illness (N=42)

Etiology	Frequency (n)	Percentage (%)
Dengue Fever	13	30.9
Enteric Fever	8	19.0
Scrub Typhus	7	16.7
Leptospirosis	3	7.1
Malaria	2	4.8
Viral Hepatitis A	2	4.8
Klebsiella	2	4.8
Viral Hepatitis E	1	2.4
Streptococcus mitis	1	2.4
Mixed Infection (HIV plus TB)	1	2.4
Unknown	2	4.8

The mean duration of hospital stay of study participants was 12.5 ± 3.4 days. During the period the complication documented among patients with febrile jaundice was encephalopathy (9.5%), multi-organ dysfunction syndrome (9.5%), acute kidney

injury (7.1%) and bleeding manifestation (7.1%). Other complications reported are given in [Table 5]. Out of the 42 patients analysed in this study, 22 recovery i.e. 52.4%, 10 were referred elsewhere

based on patient request, 8 left against medical advice while 2 death (4.7%) was documented.

Table 5: Complication observed among patients with febrile jaundice (N=42)

Complication	Frequency (n)	Percentage (%)
Encephalopathy	4	9.5
Multi-organ Dysfunction Syndrome	4	9.5
Acute Kidney Injury	3	7.1
Bleeding Manifestations	3	7.1
Thrombocytopenia	2	4.8
Shock	2	4.8
Acute Liver Failure	2	4.8

DISCUSSION

The present study provides the aetiology and clinical features of patients presenting with febrile jaundice over a period of one year in a tertiary care hospital in Karnataka, India. Regional data on the causes of jaundice presenting with jaundice is essential to understand the disease burden to plan treatment protocol and appropriate public health control measures.

A total of 42 patients reported during the study period with fever and jaundice which was included for the final analysis. A study by Mokta et al,^[6] done in a similar setting in Himachal Pradesh over a period of one found documented 170 cases of febrile jaundice which was much higher than other study. While Annam et al,^[2] in their study done in Odisha over a period of two year reported 107 cases. Thus, reflecting a wide difference in the number of cases across the country due to climatic condition, human behaviour, sanitation practices, occupational pattern and vector bionomics.

Majority of the patients (74.2%) belonged to the age group of 30 to 60 years with 66.7% being males. These finding were similar to those by Annam et al,^[2] who observed a male predominance (82.3%), and most patients (67.1%) belonged to the age group above 40 years. On the contrary, Mokta et al,^[6] reported female predominance (64.7%) with mostly being aged less than 30 years (39.4%). Again the gender and age distribution also show variation making generalization of findings difficult. There is a need to compare the pattern of febrile jaundice cases over longer time duration and also study its occurrence in relation to seasonal changes. Overall it can be seen that the middle age or working population are affected across the studies indicating a loss of productivity and wage.

The common symptoms associated with febrile jaundice in the present study were myalgia (76.2%), nausea/vomiting (50%), anorexia (42.8%) and headache (35.7%). Abominal pain and rashes were seen among 23.8% and 16.7% respectively. Other findings noted were hepatomegaly, splenomegaly, altered sensorium and bleeding manifestation. Constitutional symptoms were present in most of the patients often before the onset of jaundice. Moreover, clinical detection was jaundice was seen among 42.8% cases only. Laboratory investigation of

bilirulin level was essential to detect the subclincal and mild cases of febrile jaundice, since visual examination often fails to detect it.

Dengue was the most common cause of febrile jaundice in our study followed by enteric fever, scrub typhus and leptospirosis. Annam et al,^[2] also found dengue to be the most common aetiology of febrile jaundice in their study. Dengue is known to be prevalent in tropical regions, with outbreaks occurring more frequently during the post-monsoon period. Mostly it is asymptomatic despite the presence of liver involvement. It should be considered as a differential diagnosis in all case of febrile illness with elevated bilirubin.

Ahmed et al,^[7] in their study documented the presence of jaundice among 12.2% cases of typhoid fever while hepatosplenomegaly was seen among 87.1%, thus causing diagnostic difficulties with other tropical infections. Therefore, establishing an accurate diagnosis prior to the commencement of antibiotic treatment is essential. Mokta et al,^[6] reported around 60.6% of febrile jaundice in their study was due to scrub typhus which was followed by hepatitis E (21.2%) and leptospirosis (5.3%).

Gadia et al,^[3] conducted a similar study in Africa, found hepatitis B (51.5%), E (33%) and C (20.6%) to be the common causes with zero cases of leptospirosis, dengue or malaria. Syhavong et al,^[5] in their study done in Laos, Thailand found dengue to be more prevalent i.e. 17.5% followed by scrub typhus (7.3%), leptospirosis (6.8%), hepatitis B and C (4.9%) and hepatitis E (1.6%). This study did not report any case of enteric fever and malaria. Being a tropical country their disease pattern was similar to our study.

Malaria was also identified as an important etiology. Jaundice occurs in malaria due to hemolysis, cholestasis or hepatocellular dysfunction. Naik et al reported 10.1% patient presenting with jaundice among those with malaria due to plasmodium vivax. The bilirubin among these patients was 4.47 mg with 78.9% having elevation of AST and ALT values. Prompt diagnosis and treatment remain essential to prevent complications and reduce mortality.

Jaundice was clinically detected only among 42.8% cases, with the remaining 57.2% requiring laboratory test to identify elevated serum bilirubin. The liver enzyme abnormalities were also seen among most of the patients. There was a wide variation in the liver enzyme values across the patients. Those with viral

hepatitis showed AST and ALT in the range of 3,000 to 4,000 IU/L. These laboratory parameters were valuable in narrowing the differential diagnosis and guiding further investigations.

The study findings have important clinical implications. Since the etiological spectrum of febrile jaundice varies geographically, clinicians need to adopt a syndromic approach while taking into consideration the local epidemiological patterns. Detailed environmental history including sanitation, source of drinking water, contact with vector and travel history is essential to arrive at diagnosis. Early recognition based on clinical examination and targeted diagnostic testing can assist timely treatment by reduce complications, and improving patient outcomes. Additionally, public health measures should focus on improving sanitation, ensure vector control, provision of safe drinking water, and providing health education to reduce the incidence of preventable infectious causes of febrile jaundice.

The limitations of the study include its hospital-based design, which may not accurately reflect the disease burden in the community. Our being a tertiary care hospital may be influenced by referral bias, since only severe cases are more likely to be admitted at tertiary centers. Lastly, some etiologies may have been underdiagnosed due to limited availability of advanced diagnostic tests.

CONCLUSION

Infectious diseases remain the predominant cause of febrile jaundice among patients admitted to a tertiary care hospital in Karnataka. Dengue, enteric fever, scrub typhus, leptospirosis, hepatitis A and malaria constitute the major etiological factors. A comprehensive clinical assessment combined with appropriate laboratory investigations is crucial for early diagnosis and management. Understanding the regional etiological spectrum of febrile jaundice can aid clinicians in developing effective diagnostic and therapeutic strategies and contribute to improved patient outcomes.

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