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Study of Spectrum and Outcomes of Acute Febrile Illness Due to Tropical Infections with Thrombocytopenia Causing Acute Kidney Injury at a Tertiary Care Centre - An Observational Study

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Abstract: ***This research delves into the intricate spectrum of outcomes observed in individuals experiencing acute febrile illness due to tropical infections with concurrent thrombocytopenia, with a particular emphasis on the associated complication of acute kidney injury (AKI). By examining a range of cases, we aim to elucidate the diverse clinical presentations, severity levels, and potential prognostic indicators. Factors such as the underlying etiology, timely intervention, and patient - specific characteristics will be scrutinized to provide a comprehensive understanding of the interplay between tropical fever, thrombocytopenia, and AKI. This exploration seeks to contribute valuable insights for clinicians managing such complex scenarios. Objective: To assess the spectrum and outcomes of acute febrile illness due to tropical infections with thrombocytopenia causing acute kidney injury. Methodology: Between 2022 and 2023, a prospective observational study including 100 patients was carried out in a tertiary care facility. The patients had acute renal injury as a result of acute febrile illness caused by tropical infections with thrombocytopenia. A thorough history was obtained, and a proforma examination was performed. The patient with a positive fever profile panel underwent evaluation for thrombocytopenia and acute renal damage. All research subjects underwent investigations, and additional causes of AKI and thrombocytopenia, such as sepsis, UTIs, obstructive uropathy, and autoimmune disorders, were ruled out. Discharge creatinine value, a predictive indicator of AKI leading to chronic renal injury, was used to compute eGFR. Results: Of the patients in the age groups of 41–50 and 51–60 years (each 29%), men made up the majority (66%) of the patient population. The majority of patients (100%) and evidence of pallor (23%) had feverish symptoms when they first arrived, with malaria accounting for 37% of the cases. The majority of patients (92%) made a full recovery of their renal function (89%). The non - survivors had considerably higher mean levels of urea, creatinine, sodium, and potassium than the survivors (all p - values < 0.0001, p - value = 0.028, respectively). The majority of patients (85%) had conservative care, and a higher percentage of non - survivors needed hemodialysis (p - value < 0.0001).***

Keywords: Acute febrile illness, tropical infections, acute kidney injury, thrombocytopenia

1. Introduction

Acute febrile illness (AFI) is characterized by an oral temperature over 37.5 °C for at least 24 hours and a period of less than two weeks, together with non - specific symptoms that impede the localization of a specific organ system [1]. Fever, rashes, bodily pain, loose stools, vomiting, widespread body edema, decreased urine production, headache, coughing, and dyspnoea are some of the nonspecific symptoms[2]. Geographic location may play a role in the variety of etiologies of AFI. In many regions of the world, the infectious etiology and epidemiology of AFI—defined as acute illness lasting less than one week without a known cause—remain inadequately understood [3]. Malaria, leptospirosis, influenza, dengue, chikungunya, and typhoid fever are the most common causes of acute fever in Asian nations.[4]

Fever - related thrombocytopenia aids in fever treatment and differential diagnosis narrowing. A vital component of blood for blood coagulation is the platelet. A platelet count of 150000– 450000/mm^3 is typical. In nations like India, AFI brought on by tropical illnesses that produce thrombocytopenia is one of the leading causes of morbidity and death[5]. A platelet count less than 150x10^9 /L, or the 2.5th lower percentile of the normal platelet count distribution, is considered thrombocytopenia. Unless platelet dysfunction is present along with the low count, platelet counts greater than 50×10^9 /L usually do not result in clinical issues; instead, they are detected during a routine complete blood count. Seek medical treatment if a patient has spontaneous bruising, purpura, or platelet counts below 30×10^9 /L.[9]

A fever is defined as a rise in body temperature that is more than the typical daily fluctuation and is accompanied by an increase in the hypothalamic set point. Fever is defined as a temperature of > 37.20 C (> 98.9 0 F) in the morning or > 37.70 C (> 99.90 F) in the afternoon.[6]

Thrombocytopenia - induced acute kidney damage (AKI) is a common and deadly consequence that contributes to morbidity and death in tropical fever cases. A more effective syndromic approach is required in this case in order to treat the patient early and avert problems. AKI is frequently seen in tropical fevers accompanied with thrombocytopenia, such as those caused by dengue, typhoid, rickettsia, leptospirosis, and chikungunya. Prerenal and intrarenal factors account for

the majority of the AKI in cases of tropical illnesses. Risk factors such as overseas travel, migration, global warming are responsible for the resurgence of diseases.[7]

AKI is categorized according to its pre - , renal, and post - renal causes. Pre - renal and post - renal AKI are the result of extra - renal illnesses that lower glomerular filtration rate (GFR); only intrinsic AKI is indicative of actual kidney disease. These pre - and/or post - renal circumstances will eventually lead to renal cellular damage and, consequently, intrinsic renal disease if they continue.[8] According to the most current KDIGO AKI Guidelines, an AKI can be any of the following:

Serum creatinine must rise by at least 0.3 mg/dl (≥26.5 μ mol/l) in 48 hours, or roughly two days; alternatively, it must rise to at least 1.5 times baseline, which is known or assumed to have happened in the previous seven days; or it must rise to less than 0.5 ml/kg/hr for six hours.

2. Methodology

This observational study was carried out in the Mumbai tertiary care center's Department of General Medicine. One hundred patients with acute febrile illness related to tropical fever, thrombocytopenia, and acute renal injury were included in the study population. Patients admitted to the hospital's wards and medical intensive care units gave their written, informed permission. The study was conducted for eighteen months.

Patients with AFI resulting from tropical infections with thrombocytopenia and AKI, regardless of gender, and those older than 12 years old are included in the inclusion criteria. Less than 12 years old, patients with snake bites, sepsis, inherited thrombocytopenia, chronic kidney disease, liver disease, immunocompromised patients, obstructive uropathy, immune - toxic thrombocytopenia, malignancies, DIC, autoimmune diseases, and refusal to give informed consent were among the exclusion criteria.

Age and gender were among the demographic data points that were taken into account, along with medical history, clinical characteristics (signs and symptoms, length of stay in the ICU or ward, treatment received and outcome), and laboratory characteristics (complete blood count with differentials, fever profile panel including dengue, chikungunya, influenza, West Nile virus, zika virus, Japanese encephalitis virus, malaria species, rickettsia species, Leptospira species, and salmonella, peripheral smear, three site blood culture, urine analysis with microscopy and urine culture, ESR, CRP, procalcitonin, liver function test, renal function test, HIV, HBsAg, HCV, chest radiograph, ultrasound abdomen and pelvis, echocardiography) Outcome characteristics, which were separated into three groups based on the effective glomerular filtration rate (eGFR) at patient discharge as determined by the Cockcroft Gault formula:

1. Full recovery: more than 60 ml per minute; 2. Partial recovery: 15–60 ml per minute; 3. No recovery: less than 15 ml per minute

Descriptive statistics were used in the presentation of all results. Categorical data were shown as numbers and percentages, whereas continuous data were displayed as mean and SD. The Chi - square test was used to analyse categorical variables and the T - test was used to compare the mean differences of the data. A statistically significant value was defined as a two - tailed probability value of less than 0.05. For data analysis, SPSS version 23.0 for Windows was used.

A total of 105 patients with AKI caused by tropical infections with thrombocytopenia were first screened for the trial and given an explanation of the study's protocol in their native tongue. Patients were screened based on inclusion and exclusion criteria. Of them, two were on nephrotoxic medications, and three did not give their consent. Patients who signed the informed permission form and expressed willingness to participate in the study were enrolled, with the exception of these five patients.

The age group of 41–50 and 51–60 years (each 29%) had a mean (±SD) of 29 years, according to the demographic study of 100 patients. However, the age range of 12 to 20 years old had the fewest patients. The patients were between the ages of 14 and 69, with a mean age of 46.54 ± 12.35 years. Sixty - six percent of the patients were male, and thirty - four percent were female. There were 1.94 males for every female.100% of the patients had a fever when they first arrived. Other frequently reported symptoms included headache (32%), arthralgia (36%), and myalgia (49%). Conversely, just 4% of individuals had changed sensorium when they were first seen. Pallor accounted for the majority of patient presentations (23%) and was followed by icterus (16%), petechiae / purpura (16%), and pedal edema (12%). While the lowest number of patients presented with eschar (3%).

The average levels of serum creatinine, potassium, sodium, and urea were 2.79 ± 1.43 mg/dL, 138.89 ± 4.79 mEq/L, 78.46 ± 42.38 mg/dL, and 3.65 ± 0.62 mEq/L, in that order. The mean platelet count, WBC count, and hemoglobin percentage were 7.77 ± 3.43 x1000 cu. mm, 62.94 ± 33.41 x1000 cu. mm, and 11.32 ± 2.88 gm%, respectively. Malaria accounted for 37% of all cases, with leptospirosis (29%), dengue (24%), scrub typhus (5%), and typhoid disease (3%), following in order. Conversely, chikungunya was the least frequent cause (2%).

The majority of the patients (85%) needed conservative care, and 15% needed hemodialysis. ICU and hospital stay had mean durations of 0.83 ± 2.11 and 6.22 ± 3.15 days, respectively. Reproductive function was fully restored in 89% of the patients, with no recovery occurring in 8% of cases and partial recovery occurring in 3% of cases. Of the patients, the most (92%), perished, and the remaining 8% survived.

The results of the independent sample t - test showed that the non - survivors had significantly greater mean urea (p - value < 0.0001), creatinine (p - value < 0.0001), sodium (p - value < 0.0001), and potassium (p - value < 0.0001) than the survivors. e. Based on an independent sample t - test analysis, non - survivor's mean ICU stay was significantly

longer (p - value < 0.0001), and their mean hospital stay was significantly longer (p - value = 0.028). A considerably higher percentage of non - survivors needed hemodialysis, according to Chi - square test analysis (p - value < 0.0001).

3. Discussion

One of the most typical signs that someone needs to see a doctor is a fever. AFI brought on by tropical diseases combined with thrombocytopenia is becoming a frequently encountered issue. Since thrombocytopenia is a condition brought on by the underlying sickness rather than a disease in and of itself, learning about the underlying etiology is crucial.[10] When organ failure complicates acute febrile sickness caused by tropical diseases, the mortality rate might reach 20%. Tropical fever combined with thrombocytopenia can cause acute kidney injury (AKI), which is a common and deadly consequence that increases morbidity and mortality. AKI is frequently linked to tropical fever with thrombocytopenia in illnesses such as leptospirosis, rickettsia fever, malaria, dengue, chikungunya infections, and typhoid.[11] Thus, we concentrated on determining the range and results for patients who had thrombocytopenia from tropical infections that resulted in acute kidney injury (AKI).

The following headings will be used to discuss the study's findings:

Demographic Profile

The age group intervals of 41–50 and 51–60 years had the highest number of cases (each 29%) in the current investigation. Cases involving the age group intervals of 31–40 years (21%), above 60 years (12%), and 21–30 years (6%), came next. The age group between 12 and 20 years old had the fewest cases (3%). In our study population, the average age of the patients enrolled was 46.54 ± 12.35 years.

Table 1: Distribution of patients according to age

Age (years)	N (=100)	%
12 - 20	3	3
21 - 30	6	6
31 - 40	21	21
41 - 50	29	29
51 - 60	29	29
>60	12	12

Dhunputh et al. estimated that just 11% of the cases in their study involved people older than 60 years, with nearly half of the cases diagnosed in the 18 to 30 year age range.[12] These outcomes disagreed with the information from our investigation. The mean age of patients diagnosed with scrub typhus (45.5 years), malaria (35.6 years), and dengue (28.1 years) was found in a South Indian study.[13] The mean age of the patients was 44.6±17.4 years, which is consistent with the findings of our study according to Thabit et al.[14] According to Sumangala et al., the age range of the affected populations was 18–75 years, and in their study, the age group of 21–30 years had the highest prevalence of fever with thrombocytopenia (40.62%).[15] Negi et al. also found that patients between the ages of 21 and 30 (24%) had the highest prevalence of fever with thrombocytopenia, with a mean age of 36.31 years. These results align with the findings of the Gondhali et al. study (26%).[16] Similarly, the prevalence of febrile thrombocytopenia in the 21–30 age group was considerably greater (41.8%) in the study conducted by Nakhle et al. These authors claim that because younger people are the most active working group in society, they are more likely to be exposed to vector - borne illnesses like dengue, malaria, and scrub typhus.16 These results ran counter to what we found. However, in their respective research, Daher et al. supported us with a mean age of 46±16 years, while Suresh et al. found that the most common age group was between 40 and 50 years old.[17, 18]

Table 2: Distribution of patients according to gender

Gender	N (=100)	%
Male	66	66
Female	34	34

According to a gender - based assessment of the population, men outnumbered women in the current survey, with the majority of men (66%) and the remaining women (34%). Men's greater outside activity is the reason for the male preponderance. Dhunputh et al. and Suresh et al., who evaluated 68% and 62% of the male population in their respective investigations, supported our findings.[12, 17] In line with research by Nair et al., Gondhali et al., and Modi et al., which had 76%, 56%, and 70% men respectively, Negi et al. 's study had a male preponderance (72%) and (28%) females.[18, 16, 19]. Studies by Sumangala et al. and Thabit et al. reported that fever and thrombocytopenia were prevalent in males (56.80% and 61.3%, respectively).

4. Clinical Profile

4.1 Symptoms and Signs

According to published research, the majority of individuals have no symptoms, thrombocytopenia is discovered by accident, and very few have bleeding tendencies. Each patient in the current study was assigned based on the symptoms and indicators they were exhibiting at the time. Every patient that was recruited had a fever (100%). Myalgia (49%), arthralgia (36%), headache (32%), nausea / vomiting (24%), bleeding propensity (19%), and diarrhoea (15%) were among the more prevalent presenting symptoms that were evaluated. The least amount of patients, however, had reduced urine production (14%), yellowish sclera discolouration (13%), leg edema (12%), and impaired sensorium (4%). The distribution of patients based on their presenting signs revealed that pallor accounted for the bulk of cases (23%) and was followed by icterus and petechiae/purpura (16%). In addition, pedal edema (12%), facial puffiness (8%), calf muscle soreness (7%), and conjunctival hemorrhage (7%), were assessed as common presenting signs. However only 3% of patients had eschar on presentation.

Table 3: Distribution of patients according to presenting symptoms and signs

Presenting symptoms	N (=100)	%	Presenting signs	N (=100)	%
Fever	100	100	Pallor	23	23
Myalgia	49	49	Icterus	16	16
Arthralgia	36	36	Petechia/purpura	16	16
Headache	32	32	Pedal edema	12	12
Nausea/vomiting	24	24	Facial puffiness	8	8
Bleeding tendency	19	19	Calf muscle tenderness	7	7
Diarrhoea	15	15	Conjunctival hemorrhage	7	7
Decreased urine output	14	14	Eschar	3	3
Yellowish discolouration of sclera	13	13			
Swelling of legs	12	12			
Altered sensorium	4	4			

In the current study, Thabit et al. assessed 160 cases that had a clinical presentation. Of these, all had a fever, 51.25% had myalgia, which was followed by headache in 50% of patients, 41.25% had arthralgia, 37.50% had nausea, and vomiting was the most common sign at 36%. Other common signs included hypotension (18%), icterus (14%), hepatosplenomegaly (16%), pedal edema (7%), splenomegaly (5%), and clubbing (0.6%). Headache (90%) and body soreness (92%), out of 100 patients, were the most common symptoms, according to a study by Gondhali et al. Pallor affected 22% of patients, icterus affected 28%, hepatomegaly affected 12 instances, and splenomegaly affected 19 cases.[16] Only 15% of the patients complained of bleeding tendencies, of which 35% showed signs of Petechiae (Dhunputh et al., 54). Additional signs of bleeding tendencies included bleeding gums (27%), hematuria (19.4%), epistaxis (6%), malena (3%), and menorrhagia (3%). Approximately one - third of the patients had a combination of two or more of these signs.[12] According to Agarwal et al. (12), fever accounted for 91% of clinical presentations, with organomegaly (72.5%), jaundice (66%), lymphadenopathy (52.5%), abdominal discomfort (43%), rash (31.5%), vomiting (21%), and bleeding propensity (12.5%) following closely behind.[20] Negi et al. also noted that all patients had constitutional symptoms, with the most prevalent symptom being generalized weakness (48%) and the other symptoms being lassitude, arthralgia, myalgia, headache, and bone pain. A study conducted by Bhatnagar et al., Nair et al., and Modi et al. also revealed a similar sort of clinical presentation.[21, 18, 19] Generalized weakness was the most common constitutional appearance, followed by headache, body soreness, retroorbital discomfort, nausea, and abdominal pain. The author cannot identify a cause for the clinical presentation's disparity. Negi et al. further explained in references 21, 18, and 19 that pallor (46%) was the most common symptom, followed by icterus (16%) and lymphadenopathy (2%). Splenomegaly was the most often observed abdominal examination finding (24%), followed by hepatomegaly (6%) and hepatosplenomegaly (4%). Breathlessness (12%) was the most prevalent respiratory complaint, followed by coughing up expectoration and chest pain.

Upon CNS evaluation, 2 percent of patients had seizures and 6 percent of patients had abnormal sensorium. These results are similar to a research conducted by Gondhali et al., wherein 22% of participants showed pallor, 28% had icterus, 12% had hepatomegaly, and 19% had splenomegaly upon general physical examination.[16] In their investigation, Suresh et al. also discovered that fever, which was attributed to infection, was the most prevalent clinical characteristic linked to AKI. Half of the patients had oligouria, while a quarter had polyuria. According to the author, uremic symptoms such as vomiting, altered sensorium, hiccups, and seizures should prompt physicians to evaluate the possibility of renal replacement treatment.[17] Significant differences were discovered in the symptomatology of the patients by Ray et al. The most frequent symptom was myalgia, which was followed by abnormal mentation. The indications that were most commonly elicited were tachypnea and tachycardia. Every patient experienced an acute febrile illness lasting for at least seven days.[22] These conclusions had reinforced the study's findings.

4.2 Etiology

According to estimates, leptospirosis (29%), dengue (24%), scrub typhus (5%), typhoid (3%), and malaria (37%) were the most common etiologies. Conversely, chikungunya was the least frequent cause (2%).

Table 4: Distribution of patients according to etiology

Etiology	N (=100)	%
Malaria	37	37
Leptospirosis	29	29
Dengue	24	24
Scrub typhus	5	5
Typhoid	3	3
Chikungunya	2	2

According to Sumangala et al., 88.12% of the cases had an established diagnosis of infection. The most frequent cause of fever with thrombocytopenia was dengue (53.12%), which was followed by septicemia (8.75%), malaria (15.62%), haematological conditions (7.50%), enteric fever (5.63%), unknown cause (3.13%), mixed infections (dengue and malaria) (2.50%), leptospirosis (1.88%), disseminated intravascular coagulation (DIC) (1.25%), and viral hepatitis (hepatitis B) (0.62%). The most frequent haematological condition was megaloblastic anemia (5%) and acute myeloid leukemia (2.5%).1[5] According to Nair et al. 's study, the most common cause of fever linked to thrombocytopenia was septicaemia, which was found in 29 cases.[18] Additionally, infections (83.50%) were the most common cause in a research by Saini et al. The most frequent cause was dengue (47%) and malaria (20%).[23] Infections were the most frequent cause of fever with thrombocytopenia in a study by Lohitashwa et al., while malaria (41%) was the most common cause in this instance.[24] The majority of cases (61.3%) in a research conducted in Thailand by

Leelarasamee et al. had unidentified etiologies.5.7% of the cases had dengue, 7.5% had scrub typhus, and 1.1% had leptospirosis.2[5] In a related study carried out in South India, Chrispal et al. were able to determine a clear diagnosis in 8% of the cases and had an alternative diagnosis (unspecified fever) in 7.3% of the cases. Scrub typhus (47.5%), malaria (17.1%), enteric fever (8%), leptospirosis (3%), rickettsiosis (1.8%), and hantavirus (0.3%) were among the diagnoses made for patients with AFI.[13] Comparable research conducted in Pacific locations produced somewhat different findings. As an illustration, a study conducted in Papua New Guinea by Asigau et al. found that the prevalence of dengue was 14.9%, malaria was 1.5%, and chikungunya was 2.1%.[26] However, typhoid (18%), pneumonia (13%), leptospirosis (12%), urinary tract infections (9%), rickettsioses (8.4%), dengue (7.5%), and meningitis/encephalitis (6.6%), according to a study conducted in Indonesia by Punjabi et al.[27] According to Negi et al., typhoid fever (5 cases, 2.5%), malaria (30%), scrub typhus 36 (18%), undiagnosed cases 11 (5.5%), septicemia 6 (3%), and dengue 82 (41%) were the most common causes of fever associated with thrombocytopenia.

In a research by Gondhali et al., out of 100 instances of fever with thrombocytopenia, dengue fever accounted for 56 cases (56%) and was the most common cause. Septicemia (17%), malaria (15%), HIV (5%) viral hepatitis (4%) and typhoid disease (3%), in order of frequency, were also included.[16] Dengue was the most common infectious cause of febrile thrombocytopenia (48.2%) in a comparable study by Masamatti et al., followed by septicemia (19.8%), typhoid fever (15%), and disseminated intravascular coagulation (5.7%).[28] According to a study by Modi et al., viremia was the most common cause of febrile thrombocytopenia, accounting for 56% of cases. These cases were caused by dengue fever and other viral fevers, with malaria accounting for 26%, septicemia for 5.3%, megaloblastic anemia for 2.8%, haematological malignancy for 2%, and enteric fever for 1.6%. These studies all supported our findings that the most common cause of febrile thrombocytopenia is infection. Anandappa et al. evaluated 19 cases of Dengue fever (49%) cases, Rickettsia fever (14% cases), Malaria (Plasmodium falciparum, Plasmodium vivax, and mixed) (13% cases), Chikungunya cases (2 12% cases), and Typhoid cases (12 %).[29] In their study, Suresh et al. demonstrated that malaria (25.95%), which includes Plasmodium falciparum (13.48%), Plasmodium Vivax (10.68%), and Combined falciparum - Vivax malaria (1.78%), was the second most prevalent cause of febrile thrombocytopenia.[30] According to most studies, dengue was the most frequent cause of tropical acute febrile illness with thrombocytopenia.

This was attributed to different geographic locations, the rainy season, and dengue's return.

4.3 Recovery of Renal Function and Outcomes:

Renal function has been evaluated as fully recovered, partially recovered, and not recovered in the current study. According to our calculations, the highest percentage of patients (89%) had full recovery of renal function, followed by no recovery (8%), and partial recovery (3%). In terms of the results, the majority of patients (92%), while 8% of them passed away.

Table 5: Distribution of patients according to recovery of renal function

Outcome	N (=100)	%
Complete recovery	89	89
Partial recovery	3	3
No recovery	8	8

Negi et al. discovered 4.5% overall mortality, which was lower than our findings. Out of 82 dengue fever cases, two patients (2.43%), one patient (1.66%), four patients (11.11%) out of 36 scrub typhus cases, one patient (16.67%) out of 6 septicaemia cases, and one patient (9.09%) out of 11 undiagnosed cases died. Gondhali et al. 's study showed that the highest cause of death, septicemia (5%) and dengue fever (1%), was overall 6%.1[6] In Patil et al. 's study, 95% of patients had positive results, 5% had deaths, and 60% of patients had septicemia as their primary cause of death, which was followed by viral fever and malaria.3[1] Septicemia accounted for 78% of deaths in the Lohitashwa et al. study, while dengue caused 22% of deaths.2[4] While the predominant cause of death differed, the mortality in our study is nearly identical to those of studies conducted by Gondhali et al. and Patil et al. Scrub typhus was a major cause of death in our study, although it was not in the investigations by Gondhali et al. or Patil et al.[16, 31].

4.4 Biochemical Parameters and its Association with Outcomes

AKI's minor electrolyte disruptions were described in detail by Suresh et al. Urine containing eosinophils is a sign of acute interstitial nephritis, which is not specific but is often brought on by drugs.1[7] We divided up the patients in the current trial based on a number of biochemical factors, including renal profile and total blood counts. The mean serum urea, creatinine, sodium, and potassium for the renal profile were, in order, 78.46 ± 42.38 mg/dL, 2.79 ± 1.43 mg/dL, 138.89 ± 4.79 mEq/L, and 3.65 ± 0.62 mEq/L. Mean hemoglobin, WBC count, and platelet count for the CBC were 11.32 ± 2.88 gm%, 7.77 ± 3.43 x1000 cu. mm, and 62.94 ± 33.41 x1000 cu. mm, in that order.

We found a statistically significant difference (all p - values < 0.0001) in the mean levels of urea, creatinine, sodium, and potassium between survivors and non - survivors based on analysis using an independent sample t - test. The non - survivors had higher mean values. We were unable to demonstrate a statistically significant difference in mean hemoglobin, WBC count, and platelet count between survivors and non - survivors using independent sample t - test analysis (p - values = 0.888, 0.984, and 0.487, respectively). Aggarwal et al.[33] reported that the mean serum platelet count, WBC count, and hemoglobin were 12.57 ± 2.8 gm%, 9615.63±5322.75, and 94444.44 ± 59298.68, respectively. The mean serum urea, creatinine, sodium, and potassium were 109.97 ± 66.11 mg/dL, 2.99 ± 1.67 mg/dL, 141.41 ± 3.71 mEq/L, and 3.46 ± 0.5 mEq/L, respectively. Derangements in serum creatinine and urea levels, indicative of renal function tests, were noted in 48 instances (24%) and 32 cases (16%) of the study conducted by Negi et al. Malaria

(40%) was the most common etiology linked to impaired renal function, followed by scrub typhus (38.88%), septicemia (33.33%), cases that went untreated (27.27%), and dengue fever (7%). Out of 100 patients, 24% of cases in the study by Gondhali et al. had abnormal renal function tests; the bulk of these instances were associated with septicemia, followed by dengue, malaria, and viral hepatitis with 3, 3, and 1 case each, respectively.1[6] Comparing the distribution of platelet counts at admission in the range of more than 50, 000/cu mm in 111 (69%) cases to 62 (56.80%) cases in the study by Nair et al. and 24% cases in the study by Saini, Sumangala et al. assessed this distribution. Sumangala et al. observed platelet counts ranging from 21, 000 to 50, 000/cu mm in 39 patients (24.37%) however Nair et al. 's study found platelet counts < 0.0001 in 28 instances (25.70%). None of the patients with enteric fever, dengue, or mixed illness patterns in the Aggarwal et al. study had received dialysis.

There were 32 cases of AKI in all; 18.75% of these cases were dialysed, and there was no in - hospital death.3[3] In his research, Nair et al. discovered that 3% of all patients died in the hospital and that 10.2% of AKI patients received dialysis.110 Another study carried out in southern India revealed that 19.21% of patients with AKI needed dialysis.[30] Anandappa et al. managed 62 AFI with thrombocytopenia cases until their release from the hospital. The remaining 2 patients required renal replacement treatment, which was administered, while the remaining 98 cases were treated conservatively with fluid correction. All of the patients under conservative care recovered [84 (eGFR >60 ml/min) and 14 (eGFR 15–60 ml/min) partly].

Additionally, of the patients receiving renal replacement therapy, one recovered after receiving it three times for Dengue fever, while another patient passed away after receiving it once for Rickettsia fever.[29] Studies by Nair et al. and Palevsky et al.[32] found that the start of renal replacement treatment and the number of times dialyzed were statistically significant predictors of in - hospital mortality.

5. Summary and Conclusion

The goal of the current observational study was to evaluate the range of outcomes for patients who presented with AFI owing to tropical fever with thrombocytopenia producing AKI. The study was carried out in the general medicine department of a tertiary care teaching hospital. Over the course of 18 months, we enrolled 100 patients in our trial who had tropical fever, were older than 12, and had a platelet count of less than 1.5 lakh per cubic millimeter along with AKI. A thorough history was obtained, and a proforma examination was performed.

Examinations were conducted on every individual involved in the research. Discharge creatinine value, a predictive indicator of AKI leading to chronic renal injury, was used to compute eGFR. From this investigation, the following findings can be made:

1) The majority of patients (66%) belonged to the age groups of 41–50 and 51–60 years (each 29%).
2) The majority of patients (100%) and indicators of pallor (23%) were associated with the common etiology of malaria (37%).
3) The majority of patients made a full recovery of their renal function (89%) and survived (92%)
4) Compared to survivors, non - survivors had significantly higher mean levels of urea, creatinine, sodium, and potassium (all p - values < 0.0001, p - value = 0.028, respectively).
5) The majority of patients (85%) had conservative care, and a higher percentage of non - survivors needed hemodialysis (p - value < 0.0001).

6. Limitations

Despite using a solid technique, this study has a few shortcomings.

1) Limited Sample Size: Because of the study's small sample size, the results must be verified in larger - scale research, and a bigger sample size of the study's population may have produced more definite results.
2) Single - center based: To get a more broadly applicable conclusion, a multicentric study including many hospitals may have included a wider range of demographic groups.
3) Numerous cases of AFI with thrombocytopenia may have gone unreported if patients receiving treatment in the emergency triage and outpatient department had not been included.
4) Every patient was monitored until their release, and our study does not include post - discharge monitoring for AKI survivors.

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