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Original Research Article

Fever with Thrombocytopenia in Children: Clinic-Etiological Profile in Tertiary Care Hospital

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Abstract:

Introduction: febrile thrombocytopenia is the result of varied aetiology, and the clinical course is often unpredictable. In the recent period, there has been an upsurge in the incidence of fever with thrombocytopenia in Andhra Pradesh. This may be due to the several emerging and re-emerging infections that cause frequent epidemics in the region.

Objectives: To identify the etiology and clinical profile and assess the complications of febrile thrombocytopenia.

Material and Methods: The study was carried out on 150 children 1 month-12 year, admitted to the Department of Pediatrics, government medical college Srikakulam, Andhra Pradesh, India with fever and thrombocytopenia. A thorough history was obtained and a general and systemic examination was done. Routine investigations were done in all cases and specific investigations as and when required.

Results: Among 150 cases taken, 75% (112) of children had only a fever. 10% (15) of children had a fever with bleeding. 15% (23) of children had fever with shock. The most common cause was Dengue in 40% (60) of cases followed by malaria in 32% (48) of cases, scrub typhus in 7.3 %(11) of cases, enteric fever in 6.6% (10) of cases, and septicemia in 5.3% (8)of cases. Other minor causes include ALL (Acute Lymphoblastic Leukemia) in 2.6% (4) of cases, viral hepatitis in 2.6% (4) of cases, and undiagnosed in 3.3% (5) of cases. Out of these 150 fevers with thrombocytopenia cases, mild (1,00,000 -1,50,000) thrombocytopenia was seen in 25.3%(38) of cases, moderate (50,000-1,00,000) thrombocytopenia was seen in 54.7% (82)of cases and severe (<50,000) thrombocytopenia was seen in 20 % (30) of cases. This classification is based on the lowest level of platelet counts seen during their hospital stay.

Conclusion: The commonest reason behind febrile thrombocytopenia during the study period was dengue fever followed by malaria and scrub typhus. Platelet counts are one of the indicators for the identification of bleeding manifestation and severity of disease.

Keywords: Dengue fever, Thrombocytopenia, Malaria.

Introduction

Every child with a fever has to be assessed carefully to find aetiology. In recent years fever with thrombocytopenia is a common clinical presentation in pediatric patients. Fever and thrombocytopenia cause significant morbidity in the form of bleeding manifestations, and hemodynamic instability and sometimes lead to mortality.

This causes increased anxiety among parents. Literature shows studies about fever with thrombocytopenia among adults but not much data exists among children. However, some studies do exist on the profile of individual diseases like dengue, typhoid, and malaria with thrombocytopenia in children. Thrombocytopenia is defined as a platelet count below the traditional value of 150,000 per cubic millimetre and is supported by the National Health and Nutrition Examination Survey as the lower limit than normal. [1] In the recent period there has been an increase in the number of patients with fever and thrombocytopenia. [2]

Patients with severe thrombocytopenia and bleeding manifestations have high mortality and early detection of etiological factors is important in

reducing the mortality. Platelets play a central role in normal hemostasis and also in thrombosis. [2]The climatic conditions in tropical countries like India are favourable for the transmission of most of these infections and every year, with the onset of monsoons, a rising trend has been observed in the number of cases admitted into pediatric intensive care units with febrile thrombocytopenia with variable clinical presentations and an unpredictable outcome.

Hence this study was conducted to analyze the clinicopathological profile in preference to etiology and its outcome among children presented with fever with thrombocytopenia admitted at our hospital.

Material and methods:

This was a prospective observational study conducted at the Department of Pediatrics, government medical college Srikakulam for 12 months from January 2023 to December 2023, among children in the age group 1 month to 12 years.

Study group*:*

All cases presented fever with thrombocytopenia from age 1 month to 12 years admitted to the Department of Pediatrics, government medical college Srikakulam. Informed consent was obtained and a detailed history was taken with special emphasis on the bleeding manifestations at the time of their admission and on those that presented during their hospital stay. A thorough clinical examination was carried out in every case and a work-up was planned accordingly Investigations sent included a hemogram, smear for malarial parasites, blood culture, widal, antibody titers for dengue virus, C-reactive protein, and screening for viral hepatitis.

Coagulation studies, L.F.T, R.F.T, bone marrow aspiration, C.S.F analysis, and other radiological investigations were done as needed in select cases

Results:

A total of 150 children admitted to our institution during the study period presented fever with thrombocytopenia. The demographic data on age, sex distribution, and the severity of thrombocytopenia, the etiological profile, and outcomes were studied.

Among 150 cases taken, at the time of admission, 75% (112) of children had only a fever. 10% (15) of children had a fever with bleeding. 15% (23) of children had fever with shock.

In total admissions, 30% (45) of children were less than 5 years and 70% (105) were more than 5 years. 85 were male children and 65 were female children. 40% (60) of children presented with a fever of less than 5 days and 60% (90) of children presented with a fever of more than 5 days.

Table 1: Study population

Total no. of children with thrombocytopenia studied	**150**
No. of male children	**85 (56.7%)**
No. of female children	**23 (15.3%)**
At the time of admission Fever distribution	
Fever	**112 (75%)**
Fever with bleeding	**15 (10%)**
Fever with shock	**23 (15%)**
Fever duration	
Fever < 5 days	**60 (40%)**
Fever > 5 days	**90 (60%)**
Age group	
< 5 years	**45 (30%)**
> 5 years	**105 (70%)**

Aetiology of thrombocytopenia: The most common cause was Dengue in 40% (60) of cases followed by malaria in 32%(48) of cases, scrub typhus in 7.3 %(11) of cases, enteric fever in 6.6% (10) of cases, and septicemia in 5.3% (8)of cases. Other minor causes include ALL (Acute Lymphoblastic Leukemia) in 2.6%(4) of cases, viral hepatitis in 2.6%(4) of cases, and undiagnosed in 3.3%(5) of cases.

Table 2: Distribution of the various diagnoses of febrile thrombocytopenia among children

Etiological Causes	Number	percentage
Dengue fever	60	40%
Malaria	48	32%
scrub typhus	11	7.30%
enteric fever	10	6.60%
Acute Lymphoblastic Leukemia	4	2.60%

viral hepatitis	4	2.60%
undiagnosed	5	3.30%

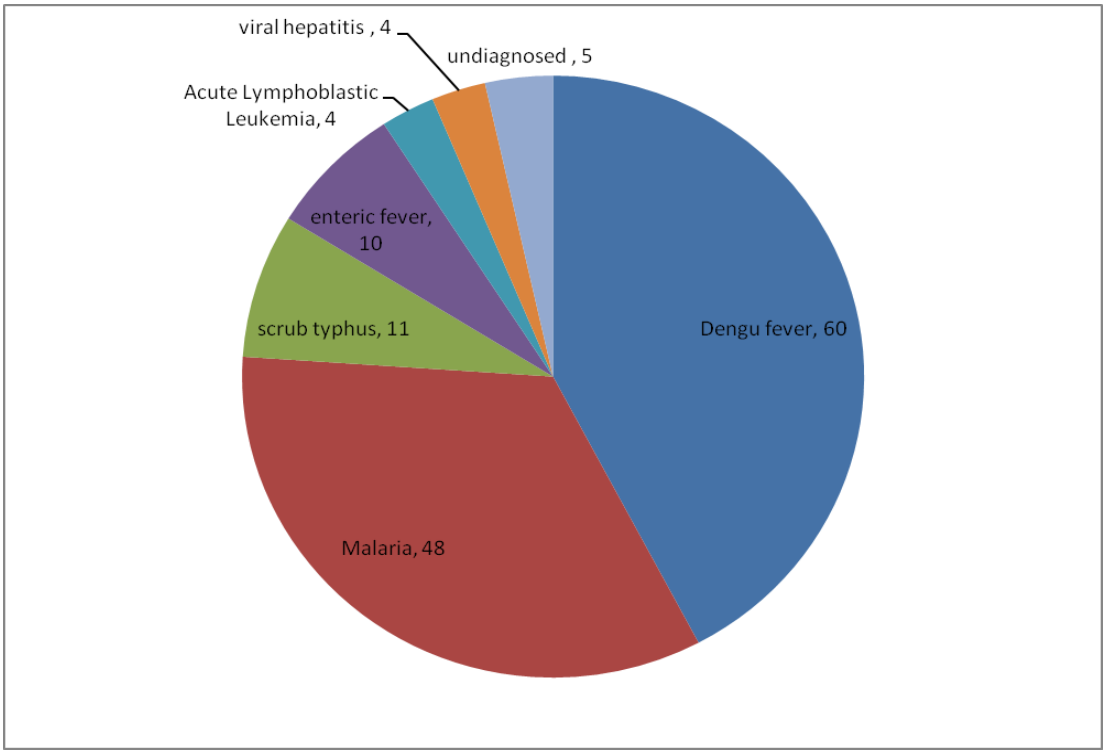

Figure 1: Distribution of the various diagnoses of febrile thrombocytopenia among children

Out of these 150 fevers with thrombocytopenia cases, mild (1,00,000 -1,50,000) thrombocytopenia was seen in 25.3%(38) of cases, moderate (50,000-1,00,000) thrombocytopenia was seen in 54.7% (82)of cases and severe (<50,000) thrombocytopenia was seen in 20 % (30) of cases. This classification is based on the lowest level of platelet counts seen during their hospital stay.

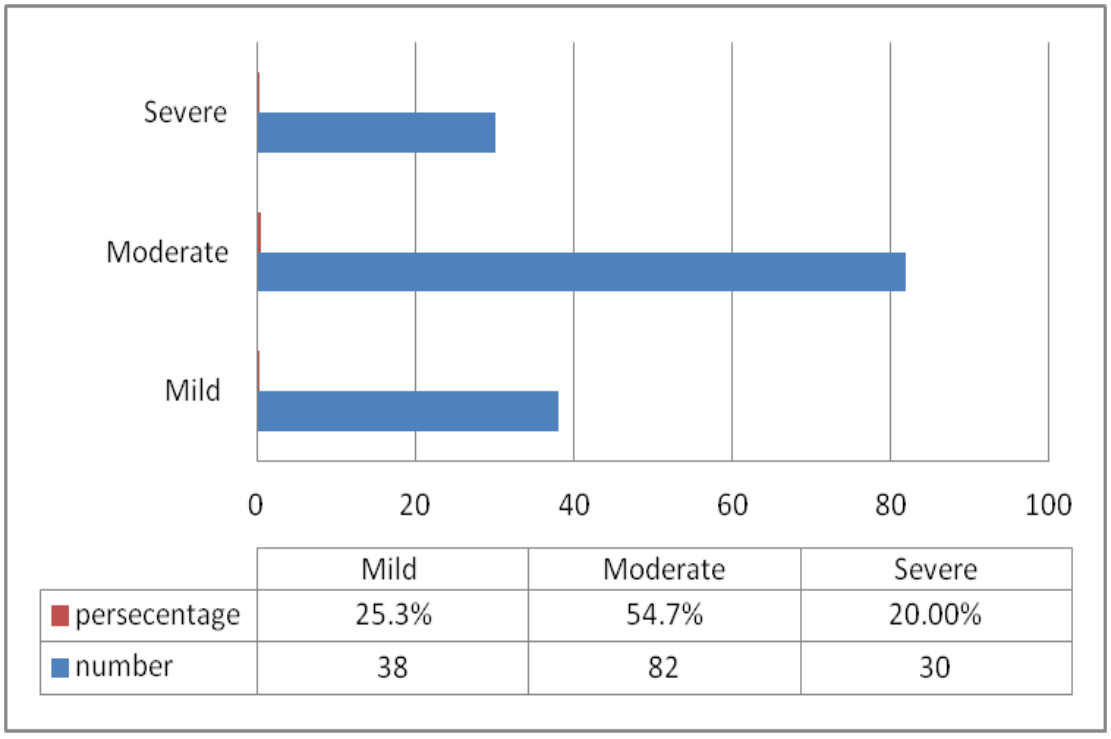

Figure 2: Severity of thrombocytopenia

60 Cases of dengue fever were classified according to the 2011 WHO classification of dengue fever. Dengue fever without haemorrhage was noted in 25% (15) of cases, dengue hemorrhagic fever grade 1 in 30% (18) of cases, grade 2 in 25% (15) of cases, grade 3 (Dengue shock syndrome) in 15%(9) of cases and grade 4 (dengue shock syndrome- undetectable pulse and blood pressure) in 5%(3) of cases.

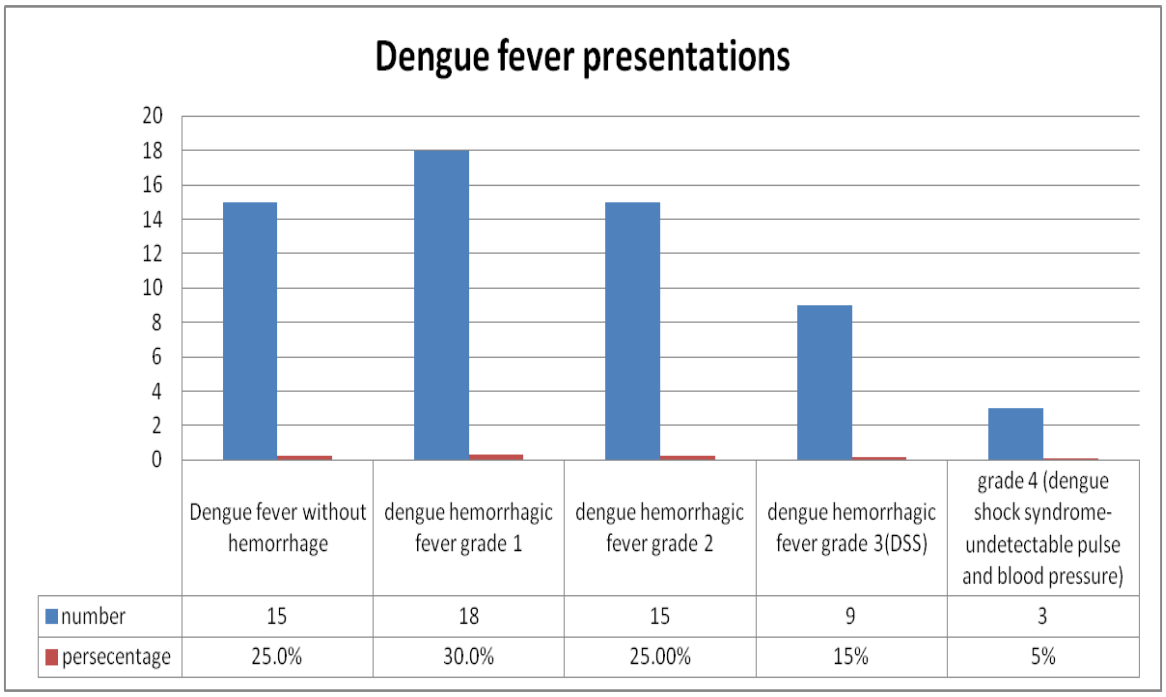

Figure 3: **Various presentations of dengue fever with thrombocytopenia**

Out of 60 cases of dengue, mild thrombocytopenia was seen in 20% (12) of cases, moderate in 50% (30) of cases, and severe in 30% (18) of cases. Although almost all cases of dengue fever had mild thrombocytopenia in the febrile phase, in patients who developed hemorrhagic manifestations, there was a rapid decline in platelet count to <50,000 cells/cu.mm during the phase of defervescence along with a rise in hematocrit. The above classification is based on the least platelet count during the hospital stay.

Among malaria 48 cases, falciparum malaria was detected in 62.5% (30) of cases and vivax malaria in 37.5%(18) of cases, Among the cases of malaria, mild thrombocytopenia was seen in 41.7% (20) of cases, moderate thrombocytopenia was seen in 33.3% (16) of cases and severe thrombocytopenia was seen in 25% (12) of cases.

Bleeding manifestations were seen in 55 patients. Out of 55 patients with bleeding manifestations, Gastrointestinal (GI) bleeding and melena was found in 50.9% (28) of cases, petechiae, and ecchymosis in 30.9% (17) of cases, and epistaxis and gum bleeding in 18.2% (10) of cases. Bleeding manifestations associated with thrombocytopenia were commonly seen among dengue cases during the phase of defervescence, with melena being the most common bleeding manifestation among these cases. One of the commonest typical symptoms was abdominal pain in 65 cases and vomiting in 30 cases followed by headache, myalgia, and jaundice. Malaria cases were most commonly associated with hepatosplenomegaly or splenomegaly alone.

Dengue fever was commonly associated with tender hepatomegaly during the phase of defervescence. Among cases of dengue fever, abdominal pain was seen in 32 cases, vomiting in 12 cases, petechiae and purpura in 12 cases, GI bleeding and melena in 22 cases, and epistaxis in 3 cases. Anaemia was the most common sign found in 65.3% (98) of the cases.

Platelets were transfused in 10 patients, which included patients with platelet count <10,000, patients with dengue shock syndrome, and patients with septicemia. None of the malaria cases received platelet transfusions. There was a spontaneous improvement in platelet count within 48 hours of the institution of anti-malarial treatment in malaria cases. Among dengue cases, the average time for platelet count recovery was within 2-8 days of illness, irrespective of whether they received platelet transfusion or not. Out of 150 patients, 144 of them had a good recovery and 6 of them left against medical advice before discharge.

Discussion:

In this study, the clinical profile, and etiological profile of febrile thrombocytopenia and its outcome were studied. In the present study the majority of children presented with gastrointestinal symptoms followed by vomiting, headache, myalgia, GI

bleeds, and altered sensorium. Praveen Kumar et al [3] and Saba Ahmed et al [4] studies also revealed GI symptoms were the most common followed by headache and bleeding in Praveen Kumar et al [3] study and rashes in Saba Ahmed et al [4] study. These studies' results were compared with the present study. In the present study among 150 children, 20% had severe thrombocytopenia, 54.7% had moderate thrombocytopenia and 25.3% had mild thrombocytopenia.

Muhammad Ayub et al [5] study revealed severe thrombocytopenia in 60% of children, moderate thrombocytopenia in 20%, and mild thrombocytopenia in 20%. The mean duration of thrombocytopenia in this study is 4.25 ± 1.5 days which is comparable with Aisha Sajid et al [6] study where the mean duration of thrombocytopenia was 5 days.

The most common cause was dengue fever, found in 40% of cases. It was found to be 11.11% and 17.1% in Jamal A et al [7] and Mahmood K et al [8] studies respectively. The association of thrombocytopenia with malaria was reported to be higher than the present study in certain other studies done by Jamal A et al, [7] Beale P et al [9] and Badvi A.J.et. Al [10] reported a prevalence of 69.18%, 85%, and 50% respectively.

In Badvi A. J. et al study, [10] enteric fever contributed to about 5% of cases of febrile thrombocytopenia which is similar to the present study.in the present study hepatomegaly in 40% of cases, splenomegaly in 30% of cases, combined hepatosplenomegaly in 50% of cases, and lymphadenopathy in 5% of cases. In Badvi A. J. et al study, [10] anaemia was found in 71% of cases, whereas splenomegaly was seen in 79.2%, hepatomegaly in 60.9%, and lymphadenopathy in 39.1% of cases.

Conclusion:

Fever with thrombocytopenia could be a common and challenging clinical problem in pediatric wards. In this present study duration, dengue fever is the most common cause of febrile thrombocytopenia closely followed by malaria fever, especially in epidemic scenarios. Other infections such as scrub typhus, enteric fever, ALL, and viral hepatitis, others also contribute to cases of febrile thrombocytopenia but in lesser numbers. In most of the infections, thrombocytopenia was transient and asymptomatic, usually in the mild to moderate range and resolved with treatment of the underlying condition. GI symptom abdominal pain is the most common presenting symptom. The majority of cases of bleeding manifestations are mostly associated with severe thrombocytopenia. Early identification of the cause of febrile thrombocytopenia, early and targeted therapy, and preservation of platelet count and hemostatic function all contribute to a successful recovery.

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