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OVERVIEW OF FEBRILE THROMBOCYTOPENIA IN PEDIATRIC POPULATION

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ABSTRACT:

INTRODUCTION:

Febrile thrombocytopenia is a notable clinical condition in paediatric patients, marked by the concurrent presence of fever and a reduced platelet count. This condition can signal a variety of underlying illnesses, ranging from viral infections to severe haematological disorders. Grasping the full scope of febrile thrombocytopenia in children is essential for prompt diagnosis and proper management, significantly impacting patient outcomes.

METHODS:

This hospital-based observational study was carried out at Saveetha Medical College and Hospital. It involved analysing the details of patients aged between 1 to 15 years who presented with fever and thrombocytopenia on admission.

RESULTS:

In our study, the most common etiology to cause febrile thrombocytopenia was dengue followed by other viral infections and scrub typhus. Males had more preponderance to thrombocytopenia than females. Fever and myalgia were the most common clinical manifestations among these patients.

CONCLUSION:

Febrile thrombocytopenia in children represents a multifaceted clinical challenge. A comprehensive approach that includes timely diagnosis, appropriate management, and ongoing research is vital to improving outcomes and ensuring the health and well-being of paediatric patients.

KEYWORDS: thrombocytopenia; febrile; dengue fever; scrub typhus, paediatrics.

INTRODUCTION:

Since ancient times, fever has been acknowledged as the cardinal sign of disease and is characterized as an increase in body temperature above the typical circadian range due to change in the thermoregulatory centre located in the anterior hypothalamus [1]. Febrile thrombocytopenia, characterized by a decrease in platelet count during episodes of fever. The clinical implications of febrile thrombocytopenia are profound, as low platelet count increases the risk of bleeding manifestations, ranging from petechiae and purpura to more severe haemorrhagic events.

India, being a tropical country, has a climate that supports the transmission of many infectious diseases. In recent years, the monsoon season has brought a rise in cases of febrile thrombocytopenia from various origins. The heavy rainfall creates puddles, which become prime breeding grounds for vectors, facilitating the spread of diseases like malaria, dengue fever, chikungunya, and lymphatic filariasis.

Infections are the most common causes of thrombocytopenia with common causes including malaria, dengue, leptospirosis, septicaemia, and scrub typhus.[2] Each of these infections presents unique clinical features and necessitates distinct management strategies. Hence the co-occurrence of fever and thrombocytopenia demands a thorough and systematic diagnostic approach, as promptly identifying the underlying cause is essential for

effective treatment and improved patient outcomes. This study was designed to evaluate the clinical profile as well as identify the cause of fever and thrombocytopenia in individuals who presented with it.

METHODOLOGY:

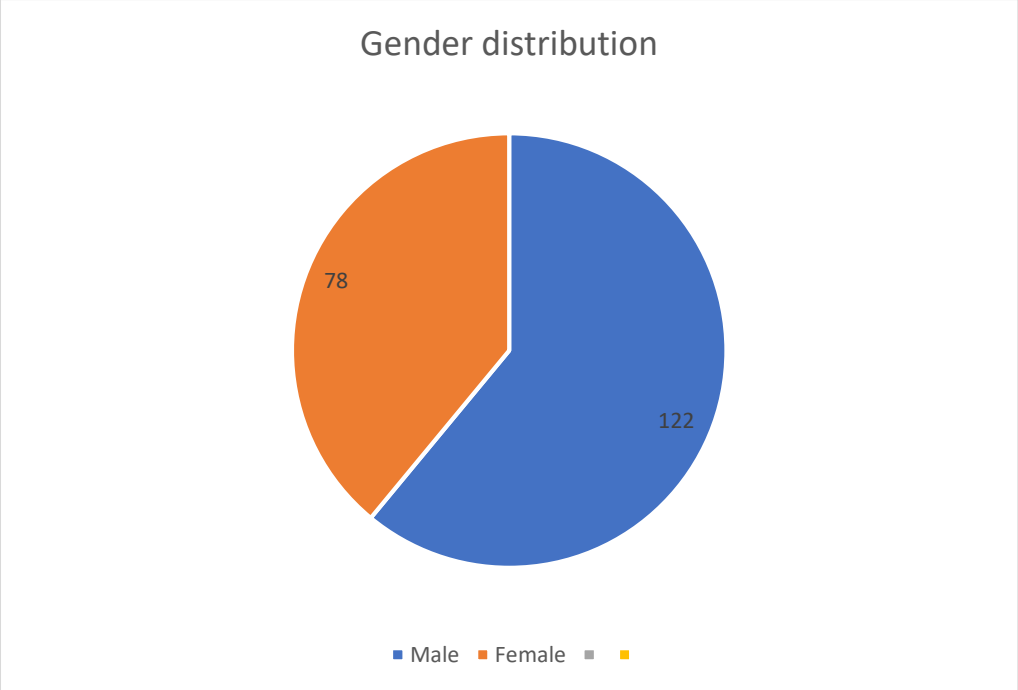
The purpose of this observational study was to evaluate the clinical profile, aetiology, as well as complications associated with febrile thrombocytopenia in paediatric population. Children from 1 to 15 years old who presented with fever and thrombocytopenia between November 2023(1/11/2023) to February 2024(29/02/2024) were included in the study. The study excludes patients on thrombocytopenia-causing medication, antiplatelet medications, with platelet dysfunction and patients without adequate clinical information. Furthermore, participants with cirrhosis and chronic liver disease were not allowed to participate in the study, nor were those currently receiving treatment with chemotherapy or other immunosuppressants for a haematological condition or malignancy.

Relevant data were collected using predefined criteria, which included demographic information (age and sex), clinical characteristics (duration of fever and associated symptoms), laboratory findings (complete blood count results and peripheral blood smear findings), and details of the diagnostic workup performed during admission (infectious disease serologies and imaging studies). All clinical findings and lab test reports were analysed.

RESULTS:

This study involved 200 patients of whom 61% were males and 39% were females. The patients age ranged from 1 year to 15 years. Most of the patients (65%) were younger 10 years of age [2]. In our investigation, dengue fever accounted for the majority of the cases (56%) and was followed by other viral infections (21.5%) and scrub typhus (17.5%).

Among those with dengue fever, those without warning signs were 70% and those with warning signs were 30%. No malarial cases were noted during this study. The majority of the cases were seen in the post monsoonal season. Data was analysed using SPSS and the severity of decrease in platelet count was significant ($p < 0.05$) in dengue compared to other disease.



ETIOLOGY	CASES (n=200)	PERCENTAGE (%)
DENGUE	112	56%
-without warning signs	78	70%
-with warning signs	34	30%
SCRUB TYPHUS	35	17.5%
VIRAL INFECTIONS	43	21.5%
ENTERIC FEVER	02	1%
SEPTICEMIA	03	1.5%
LEPTOSPIROSIS	01	0.5%
HLH	02	1%
Hematological malignancy	02	1%
TOTAL	200	100

In this study on patients with febrile thrombocytopenia, the clinical presentation predominantly comprised, among other symptoms, fever (98%) and myalgia (98%), followed by abdominal pain (90%) and vomiting (90%).

S.no	Clinical Features	Percentage (%)
1.	Fever	98%
2.	Generalized weakness, body ache	96%
3.	Abdominal pain	89%
4.	Vomiting	80%
5.	Cough and cold	36%
6.	Petechiae	10%
7.	Loose stools	7%
8.	Convulsions	1%
9.	Poor oral intake	5%

DISCUSSION:

Platelet count less than 1.5 lac/cu mm are considered thrombocytopenia, and they are most frequently seen in febrile condition [3]. In our study, most frequent cause of febrile thrombocytopenia is dengue (56%) followed by other viral infections (21.5%), scrub typhus (17.5%), septicemia (1.5%), enteric fever (1%), HLH (1%) and hematological malignancies (1%). These findings are consistent with other studies such as Bhalara et al [7], Sonali et al [4].

Among the 200 patients, about 65% of the cases were below 10 years of age. This is similar to the findings found in studies like Bhalara et al, Gutthi et al. where the younger age group affected is associated with their outdoor activity [5,7]. In this study, 61% of the patients were male compared to 38% female. Comparing this finding with other studies like Ramabhatta et al., Masamatti et al., and Gutthi et al., results have shown male being more affected than female which may be due to more exposure due to outdoor activities [5,7,10]. The majority of the cases that were presented after the monsoon. Rainfall, temperature and humidity are related to this, and these factors promote mosquito development. [6].

Fever and myalgia were the most prevalent clinical symptoms in our investigation. This is followed by abdominal pain (89%), vomiting (80%), cough and cold (36%) and less common manifestations include loose stools (7%), convulsions (1%), poor oral intake (5%), nasal bleed. These findings were consistent with studies like Naikwadi MA et al., Bhalara et al, Sonali et al [7,8]. Comparing the results from this study with other studies it has been found that febrile thrombocytopenia is most frequently associated with gastrointestinal symptoms. This might be because of the liver's involvement and peritoneal cavity's fluid accumulation, similar to dengue fever [2].

According to our study, Dengue (56%) was the most common cause of fever and thrombocytopenia, with 30% of patients having warning signs and 70% of patients having dengue without warning signs. This finding was similar to the findings among other studies as in Patne et al., Modi et al with dengue being the most common cause of fever with thrombocytopenia [11,12]. This was followed by other viral infections (21.5%) and scrub typhus (17.5%). Among the participants, 1.5% of the patients had septicemia. Among the study participants, no malarial cases

have been noted. However, other studies like Gandhi et al. and Kumbhar et al. showed malaria as the common cause for fever with thrombocytopenia [13,14]

The study findings highlight that fever with thrombocytopenia can manifest in unusual ways, emphasizing the need for immunological tests for accurate diagnosis.

CONCLUSION:

Febrile thrombocytopenia in children is a complex condition with varied aetiologies and presentations. A thorough understanding of the condition, combined with prompt diagnostic and therapeutic measures, is essential for effective management and improved patient outcomes. Continued research and education are necessary to advance our understanding and treatment of this critical paediatric condition.

BIBLIOGRAPHY:

1. Atkins E: Fever: its history, cause and function. Yale J Biol Med. 1982, 55:283-9.
2. Deshpande T, Gupta H B, Pandya N, et al. (September 21, 2023) Spectrumof Febrile Thrombocytopenia in the Pediatric Population (1-18 Years) Admitted in a Tertiary Care Center. Cureus 15(9): e45681. DOI 10.7759/cureus.45681
3. Paramjit, E., Rao, R., Sudhamani, S., Roplekar, P., Shaffi, Z., & Roy, S. (2016). Spectrum of thrombocytopenia: A clinicopathological study with review of the literature. Muller Journal of Medical Sciences and Research, 7, 121-124.
4. Jawed Ahmed Badvi, Bahawaluddin Jamro, Aftab Ahmed Soomro, Shankar lal,Saifullah Jamro. An experience of thrombocytopenia in children at tertiary care hospitals sukkur and larkana MC. 2012;19:23-26.
5. Gutthi LP, Vegesna S, Pundarikaksha V, Kolla S, Gundapaneni M, Karimi PK: A study of clinical and lab profile of fever with thrombocytopenia. Int J Contemp Med Res. 2017, 4:5.
6. Chakravarti, A., Kumaria, R. Eco-epidemiological analysis of dengue infection during an outbreak of dengue fever, India. *Virol J* **2**, 32 (2005). https://doi.org/10.1186/1743-422X-2-32
7. Bhalara, S. K., Shah, S., Goswami, H., & Gonsai, R. N. (2015). Clinical and etiological profile of thrombocytopenia in adults: A tertiary-care hospital-based cross-sectional study. International Journal of Medical Science and Public Health, 4, 7-10.
8. Aman M. Naikwadi & Sayyad Nikhat Anjum. (2019). Study of clinical and laboratory profile of fever with thrombocytopenia in a tertiary hospital. International Journal of Contemporary Medical Research, 6(7), 208-211.
9. Thrombocytopenia. (2019). Accessed: April 10, 2019: https://www.nhlbi.nih.gov/health/thrombocytopenia.
10. Masamatti SS, Vijaya C, Bhat Amulya: Laboratory and etiological profile of febrile thrombocytopenia cases a cross sectional study. Natl J Lab Med. 2016, 5:44-8.
11. Patne SV, Chintale NK: Clinical profile of patients with thrombocytopenia at tertiary health care centre . Int J Adv Med. 2017, 4:1551. 10.18203/2349-3933.ijam20175082
12. Modi T, Mehta A, Sriram A: Clinical profile of febrile thrombocytopenia: a hospital-based cross-sectional study. J Res Med Dent Sci. 2016, 4:115.
13. Gandhi AA, Akholkar PJ: Clinical and laboratory evaluation of patients with febrile thrombocytopenia . Nat J Med Res. 2015, 5:43-6.
14. Kumbhar SS, Kanetkar SR, Mane AM, Bonde VS, Demde RB: A study of clinical and laboratory profile of patients having fever with thrombocytopenia and its outcome. Indian J Basic Applied Med Res . 2017, 6:282-9.