

A Clinical Study of the Association of Thrombocytopenia with Acute Febrile Illness

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Date of Submission: 07/04/2021

Date of Review: 15/04/2021

Date of Acceptance: 30/04/2021

ABSTRACT

Background: Thrombocytopenia accompanying acute febrile illnesses is a matter of concern because lack of prompt treatment could result in significant mortality. We in this study tried to evaluate the clinical profile of cases with acute fever and thrombocytopenia and determine the cause of fever with thrombocytopenia and the outcome of treatment of such patients in our hospital.

Methods: A total of n=50 successive cases of acute febrile illness with thrombocytopenia following inclusion and exclusion criteria were included in this study. Clinical signs such as rashes, signs of dehydration, petechiae, jaundice, lymphadenopathy, hepatomegaly, splenomegaly, anemia, abdominal tenderness, altered sensorium, were noted. Investigations included CBP, ESR, LFT, RFT, serum electrolytes, Chest X-ray, USG abdomen were done. Other investigations included Dengue serology, Malaria, Widal, IgM for leptospirosis, sputum for AFB.

Results: Out of n=50 patients with acute fever with thrombocytopenia, all of them had a definitive diagnosis with malaria (40%) as the commonest cause, followed by enteric fever (24%), viral fever (14%), septicemia (6%), dengue (14%), and leptospirosis (2%). 50% of the patients had platelet count in the range of 50,000 – 1,00,000 and 30% had platelet counts above 100,000-150,000. 8% of cases had platelet counts below 25,000 and 12% had platelet counts between 25,000-50,000 at the time of admission. 10% mortality was observed.

Conclusion: infections as the commonest cause of thrombocytopenia. Malaria, dengue enteric fever, leptospirosis, and other viral infections formed the major diseases in this group of population. The diagnosis of malaria was the common cause because of seasonal and regional variations. A definitive increase in platelet count was noted after the underlying cause was treated. Severe cases of septicemia with associated co-morbidities resulted in mortality.

KEYWORDS: Thrombocytopenia, acute febrile illness, fever, platelet count

KEYWORDS: Thrombocytopenia

INTRODUCTION

Sir William Osler stated, "Humanity has three great enemies: fever, famine, and War; of these, by far the greatest, by far the most terrible is fever".^[1] Hippocrates mentioned that "Heat is the immortal substance of life endowed with intelligence", hence, heat must also be refrigerated by respiration and kept within bounds if the source or principle of life is to persist, for if refrigeration is not provided, the heat will consume itself.^[2] The current concept of fever physiology is that host cell-derived molecules induce fever, which usually occurs in the context of an overall inflammatory response directed against pathogenic microbes. The host-derived molecules responsible for fever used to be known as endogenous pyrogens, as first demonstrated by Paul Beeson in 1948. He described the temperature-elevating effect of a substance obtained from polymorphonuclear leucocytes.^[3] Studies have described the chemical nature of Lymphocyte-activating factor which showed striking similarity with endogenous pyrogens.^[4] This provided proof that endotoxin-induced fever is mediated by IL-1 B induction of IL-6, suggesting that IL-6 might be the final common pathway for such fever. Other investigators have found E-series prostaglandins (PGE) might mediate the febrile response to pyrogens.^[4] This consensus still favors the proposition that PGE₂, the endogenous is form of PGE, plays an essential role in production.^[5] Thrombocytopenia is defined as a reduction in the peripheral blood platelet count below the lower normal limit of 150,000/ μ l. Because platelet count is prone to error, a single platelet count that is lower than normal should be confirmed by a second count. It should also be confirmed by inspecting the blood film.^[6, 7] Several factors are known to cause bleeding in association with infections of which thrombocytopenia is the common cause. Viruses produced thrombocytopenia by impaired platelet production as a result of the invasion of megakaryocytes by the virus toxic effects of viral protein on progenitor cells, virus-induced haemophagocytosis, destruction of circulating platelets by viruses — by viral antigen-antibody complexes.^[8, 9] Gram +ve

and gram -ve septicemia, miliary tuberculosis, leptospirosis, typhoid, mycoplasma pneumonia, etc. [7, 10] Septicemia resulting from both Gram-positive and Gram-negative bacteria is the commonest cause of thrombocytopenia. Therefore, we in the current study tried to analyze the causes of thrombocytopenia associated with acute febrile illnesses in patients presenting to our Hospital.

MATERIAL AND METHODS

This cross-sectional study was carried out in the Department of General Medicine, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Ethical clearance for the study was obtained from Institutional Ethical Committee. Written consent was taken from all the cases of the study.

Inclusion Criteria: 1. The patients of both sexes aged > 14 years. 2. Patients admitted with fever and found to have thrombocytopenia (platelet count < 1, 50, 000) are included in the study.

Exclusion criteria: 1. Patients other than febrile thrombocytopenia are excluded from the study. 2. Patients on antiplatelet agents/drugs for the treatment. 3. Cases of thrombocytopenia with febrile illness

A total of n=50 successive cases of acute febrile illness with thrombocytopenia following inclusion and exclusion criteria were included in this study. A careful history was recorded; general physical examination and detailed examination of various systems were done. Symptoms related to fever such as headache, nausea, vomiting, abdominal pain, diarrhea, cough, anorexia, myalgia, gum bleeding, hematemesis, oliguria, hematuria, loss of weight, etc., were noted. Clinical signs such as rashes, signs of dehydration, petechiae, jaundice, lymphadenopathy, hepatomegaly, splenomegaly, anemia, abdominal tenderness, altered sensorium, were noted. Investigations included CBP, ESR, LFT, RFT, serum electrolytes, Chest X-ray, USG abdomen were done. Other investigations included Dengue serology, Malaria, Widal, IgM for leptospirosis, sputum for AFB, ELISA for HIV1. In some cases, blood culture or urine culture were ordered. Once the specific diagnosis is reached, patients will be treated specifically and symptomatically. If bleeding complications were present, then platelet transfusions were done. All the available data was uploaded to an MS Excel spreadsheet and analyzed by SPSS version 19 on windows format.

RESULT

A total number of 50 patients admitted to our hospital were studied. No age group was considered, but the study subjects were in the age group of 18-85 years. The mean age was 35.5 ± 5.0 years. Out of n=50 cases, n=29 was male and n=21 were females. The Mean duration of hospitalization varied between 3 days to 14 days. The average duration of hospitalization was 5 ± 1.5 days.

Out of 50 patients with acute fever with thrombocytopenia, all of them had definitive diagnosis with malaria (40%) as the commonest cause, followed by enteric fever (24%), viral fever (14%), septicemia (6%), dengue (14%), and leptospirosis (2%) depicted in Table 1.

Disease category	Frequency	Percentage
Malaria	20	40
Enteric fever	12	24
Septicemia	3	6
Dengue	7	14
Leptospirosis	1	2
Viral Fevers	7	14
Total	50	100

Table 1: Incidence of various Causes of Fever with thrombocytopenia

Type of malaria	Frequency	Percentage
Vivax malaria	11	55
Falci-parum malaria	06	30
Mixed malaria	03	15
Total	20	100

Table 2: Types of Malaria associated with Thrombocytopenia

In our study, 50% of the patients had platelet count in the range of 50, 000 – 1, 00, 000 and 30% had platelet counts above 100000-150000. 8% of cases had platelet counts below 25000 and 12% had platelet counts between 25000-50000 at the time of admission depicted in Figure 1.

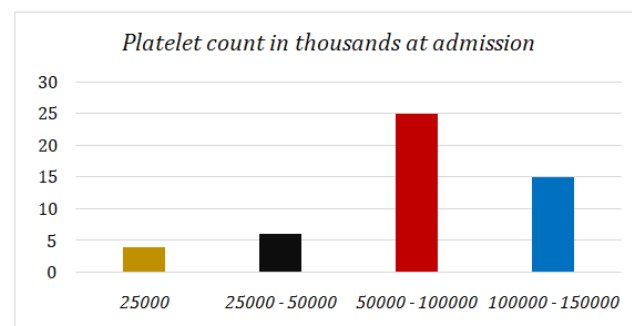


Figure 1: Platelet count in thousands at admission

Bleeding manifestations due to low platelet counts were found in n=15(30%) cases. Out of 15 cases, GI bleeding and malena was found in 5 cases, petechiae were found in

3 cases, epistaxis in 2 cases, hematemesis in 3 cases, and bleeding gums in 2 cases (Figure 2).

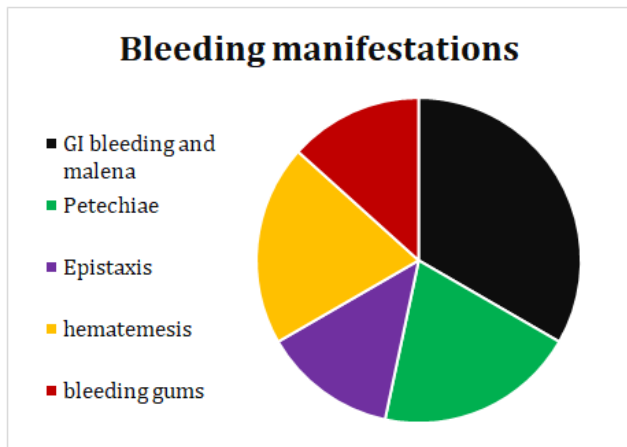


Figure 2: Bleeding manifestations

Out of n=50 cases, 45 had a good recovery and all these cases had near-normal platelet counts at the time of discharge. Out of 5 cases of mortality, 3 cases of septicemia and 2 cases of dengue fever were found.

DISCUSSION

In this study we found malaria (40%) as the commonest cause, followed by enteric fever (24%), viral fever (14%), septicemia (6%), dengue (14%), and leptospirosis (2%). These findings correlated with other studies done by Our finding correlates with similar other studies.^[11, 12] In this study the second commonest cause of thrombocytopenia was dengue similar findings have been reported by Patil et al.;^[13] Lakum et al.;^[14] and Gandhi et al.;^[15]. The present study also found that fever with thrombocytopenia occurs more frequently in male similar findings has been reported by other studies^[16, 17]. In this study, we found platelet counts below 50,000 in 20% of cases, Aman MN et al.;^[18] found severe thrombocytopenia in 18% of cases of their study in Maharashtra. In the current study, we found Bleeding manifestations due to low platelet counts were found in n=15(30%) cases. Seema A et al.^[19] found only 8% patients had bleeding episodes while 26% patients had platelet count below 20,000/mm³ and 84% had <1lakh/cu mm. On the other hand, in a Delhi-based study by Tripathy BK et al.^[20] Hematemesis, melena and epistaxis were found in 28.28%, 26.78%, and 14.28% respectively but only 12.85% cases had platelet count < 70,000/cu mm. But in a Hyderabad-based study by Khan AH et al.^[21] only 5% of patients had bleeding while 40% had thrombocytopenia. The most common clinical sign detected was splenomegaly in 27% of cases followed by pallor and then hepatomegaly in 11% cases. Most of the patients 20% were from 17 to 30 years. The majority of patients had Hb less than <10gm%. 10% presented with Hb more than >10gm%. Clinical features of all patients suffered from fever, but no

specific pattern could be identified degree was variable ranging from low to high grade. Abdominal pain was the next most common symptom followed by vomiting and 87% of patients complain of body aches and pains and 13% of patients had hemorrhagic manifestations in the form of gum bleed and melena. SJ Khan et al.^[22] study showed that Thrombocytopenia often accompanies malaria and is usually mild to moderate. It may however be symptomatic and severe. 50% of patients with malaria showed thrombocytopenia in this study. Mahmood et al. 50 in their study found 145 cases of P. falciparum malaria out of which 75.18% with thrombocytopenia. In this study, recovery was in 90% of cases with an acceptable rise in platelet counts following treatment. Patil et al.^[13] reported 95% recovery and Aman NM et al.^[18] found 94% recovery. The common cause of mortality in this study was due to septicemia in n=3 cases and n=2 cases with dengue.

CONCLUSION

In conclusion present study of the association of thrombocytopenia with acute fever reveals that infection as the commonest cause of thrombocytopenia. Malaria, dengue enteric fever, leptospirosis, and other viral infections formed the major diseases in this group of population. The diagnosis of malaria was the common cause because of seasonal and regional variations. A definitive increase in platelet count was noted after the underlying cause was treated. Severe cases of septicemia with associated co morbidities resulted in mortality.

ACKNOWLEDGMENTS: NIL

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How to cite this article: Venkatreddy G, Gugloth S. A Clinical Study of the Association of Thrombocytopenia with Acute Febrile Illness. *Perspectives in Medical Research*. 2021;9(3):12-15
DOI: [10.47799/pimr.0903.04](https://doi.org/10.47799/pimr.0903.04)

Sources of Support: Nil; , Conflict of Interest: None: