Original research article

Clinical and Laboratory profile of fever thrombocytopenia

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Abstract

Background: The concept of fever appears frequently throughout human literature, music, and art, and it has even been studied scientifically. It is not unexpected to discover precise descriptions of febrile patients in early recorded history because fever is such a prevalent symptom of sickness.

Material and Methods: Patients admitted to Department of General Medicine, Government Medical College, Ongole, Andhra Pradesh, India, will participate in this study. One hundred individuals with fever and low platelet counts will be prospectively collected. The participant ages ranged from 18 to 79, however this was not a restriction on the study. Fifty-eight men and forty-two women made up the 100 people diagnosed with fever and thrombocytopenia.

Results: Only 14 people didn't make it, while 86 made full recoveries. Thirty of the 86 patients who made a full recovery were followed up on, and their platelet counts were within normal range once they were discharged. Twelve people died from septicemia and multi-organ failure syndrome, and two died from dengue fever, for a total of fourteen deaths.

Conclusion: Thrombocytopenia, which often caused bleeding symptoms, shaped these febrile diseases. Spontaneous bleeding patients should be evaluated for disseminated intravascular coagulation. Malaria patients do not need platelet transfusions since their platelet counts recover quickly following treatment.

Keywords: Clinical, laboratory profile, fever, thrombocytopenia

Introduction

The concept of fever appears frequently in human literature, music, and art. Since fever is such a typical symptom of sickness, it is not surprising to discover detailed accounts of feverish patients in ancient writings. It was Hippocrates and subsequent Roman Empire doctors that provided the most comprehensive accounts of the symptoms and causes of fever [1, 2]. The development of a reliable thermometer by the Dutch instrument maker Gabrial Daniel Fahreneheit in the early eighteenth century sparked a new round of research into the correlation between elevated core body temperature and illness [1, 4].

The work of modern researchers began in 1948, when Dr. Paul Beeson discovered that inflammatory cells in the host are responsible for fever. Against popular belief, mononuclear phagocytes are responsible for producing this endogenous pyrogen, which was once assumed to be a byproduct of polymorph nuclear leukocytes. Interleukin-1 is chemically identical to or highly similar to lymphocyte activating factor (LAF), mononuclear cell factor and leukocyte endogenous mediator [5]. Present evidence strongly suggests that interleukin-1 (IL-1) is involved in both thermoregulation and fever.

A normal human body temperature follows a diurnal pattern, with morning lows and afternoon highs. Typically, temperatures hover around the 37.2 °C mark. Temperatures are often highest in the afternoon and evening because this is when a fever is most likely to peak [6, 7].

A disturbance in the anterior hypothalamic thermoregulatory center causes a rise in core body temperature outside of the regular 24-hour cycle, a condition known as fever. Fever is defined as a body temperature of 37.2 degrees Celsius or higher in the morning or 37.7 degrees Celsius or higher in the evening. A platelet count of less than 150,000 per microliter of blood is considered to be indicative of thrombocytopenia. This is because production is down, destruction is up (immunogenic and non-immunogenic) and the spleen is holding more and more of it. Infections are a leading cause of thrombocytopenia. Fever with thrombocytopenia can help to restrict the differential diagnosis of a clinical entity that has a protracted course of fever [8-10].

The definition of septicemia is a several infectious diseases, including malaria, dengue, leptospirosis, typhoid, HIV/AIDS and military TB, can induce a high temperature and a decrease in platelets [10]. Hence, reducing the time it takes to investigate and arrive at a diagnosis requires a well-organized,

comprehensive strategy that is carried out while keeping in mind the potential causes of fever with thrombocytopenia. As a result, research is required to understand the factors that can lead to a thrombocytopenia-associated fever. To better understand the clinical characteristics of fever with thrombocytopenia was the main focus of this investigation [11, 12].

Methodology

Clinical research conducted in the Department of General Medicine, Government Medical College, Ongole, Andhra Pradesh, India. We will recruit 100 fever and thrombocytopenia patients. Study participants were 18-79 years old. The study ignored patient sex. 58 men and 42 women were diagnosed with fever with thrombocytopenia.

Inclusion criteria
- Patients of both sexes who are over 12 years old.
- The study includes patients who were hospitalized with fever and were later diagnosed with thrombocytopenia.

Exclusion criteria
- Children under the age of 12 are not included.
- Those who have a fever but no thrombocytopenia.
- Individuals without fever and thrombocytopenia are excluded.

After a thorough history was taken, a general physical examination was performed on the patients admitted with fever and thrombocytopenia. In-depth analyses of several different structures were performed. Normal inquiry was carried out, and specialized inquiries were conducted as needed. Patients who had a definitive diagnosis, were given treatment, and for whom out-of-pocket costs permitted a repeat platelet count at discharge were not pursued, despite our best efforts to do so. Reports on the patient's history, physical, and any relevant laboratory or technical investigations were periodically recorded.

Results

Over the course of a year and a half, 100 patients admitted to our hospital were analyzed. Subjects in the study ranged in age from 18 to 79, but no specific age range was targeted. Among the 100 people who were diagnosed with fever and thrombocytopenia, 58 were male and 42 were female. Hospital stays ranged from an average of 3 days to a median of 21 days. Seven days was the typical length of stay in the hospital. Fever with thrombocytopenia was diagnosed in 100 out of 100 patients, with malaria being the most common cause, followed by enteric fever, septicemia, dengue and leptospirosis. Most cases of malaria were caused by Plasmodium vivax, next by Plasmodium falciparum and last by a combined infection of the two.

A majority 86 of the 100 patients made full recoveries, while the remaining fourteen passed away. Thirty of the 86 patients who made a full recovery were monitored and their platelet counts were within normal ranges by the time they were discharged from the hospital. Twelve deaths were attributed to septicemia and multi-organ failure syndrome, and two were attributed to dengue fever, for a total of fourteen fatalities. Platelet counts were predominantly between 100,000 and 200,000 per cubic millimeter in 7 of the 14 fatality cases.

Table 1: Evidence from the study's preliminary stages

Sr. No.	Particulars	Patients
1.	Total number of patients	100
2.	Age range in years	20-80 years
3.	Male and female	58 and 42
4.	Range of duration of hospitalization	4 to 14 days
5.	Average duration of hospitalization	8 days
6.	Definitive diagnosis	100
7.	Malaria as the common cause	40
8.	In malaria, vivax as common cause	21
9.	61,000-80,000 was common range of platelet count	37
10.	Clinical manifestation of thrombocytopenia	48
11.	Bleeding manifestations of thrombocytopenia	32
12.	Good recovery	86
13.	Mortality	14
14.	Septicemia as the common cause of mortality	12
15.	Good recovery cases followed up	30

One hundred out of one hundred instances were able to have an accurate diagnosis given to them.

Malaria was the leading cause of these illnesses, accounting for forty percent of the total number of cases. Malaria cases were broken down as follows: vivax malaria was responsible for 21 of the cases, falciparum malaria was responsible for 15 of the cases, and mixed malaria was responsible for 4 of the cases.

Table 2: Frequency of Thrombocytopenia in Patients with Fever

Sr. No.	Disease category	Patients
1.	Malaria	40
2.	Enteric fever	25
3.	Septicemia	18
4.	Dengue	15
5.	Leptospirosis	2
	Total	100

Enteric fever accounted for 25 cases, which was the second leading cause, followed by septicemia (18 cases), dengue (15 cases) and leptospirosis (2 instances).

Table 3: Cases of thrombocytopenia due to malaria

Sr. No.	Type of malaria	Patients
1.	Vivax malaria	21
2.	Falciparum malaria	15
3.	Mixed malaria	04

Table 4: Predictors of death in our sample

Sr. No.	Disease category	Patients
1.	Septicemia	12
2.	Dengue	2
	Total	14

Discussion

Patients in our study of fever with thrombocytopenia must meet the aforementioned criteria, prospective case collection is required and close monitoring is recommended. With these three criteria, we can define a representative sample to draw conclusions. It is also crucial to evaluate the depth and methods of inquiry, but doing so might be tricky.

Nair PS, A. Jain, U. Khanduri and V. Kumar ran the study over the course of a year and a half at St. Stephen's Hospital in New Delhi. Using the same criteria as our study, a total of 109 cases (76 male, 33 female patients) were analyzed. There were 29 occurrences of septicemia, making it the major cause of fever with low platelet counts. The next most prevalent cause was enteric fever, with 16 cases, followed by dengue, megaloblastic anemia, malaria and haematological malignancy, each with 10, 4 and 10 instances, respectively [13, 14].

Sixty-two patients, or 49%, had a platelet count between 50,000 and 1,000,000, followed by 28 patients with lower counts. Only 45 of 109 individuals (41.3%) had symptoms of thrombocytopenia. The majority of the bleeding manifestations (31 out of 45 patients, or 69%) were caused by spontaneous bleeding. The platelet counts of 69 patients went increased during the course of the follow-up, while those of 8 patients went down continually [15].

At a relative frequency between 68% and 100%, infections were the leading cause of fever and thrombocytopenia. When compared to other studies where infection and haematological disorders were both reported, we found that infection was the more common and more definitive diagnosis in our study. Perhaps there are seasonal and geographical differences at play here. Fever and low platelet counts were most often brought on by infection, though. In this study, malaria was the leading infectious cause, while septicemia dominated in others. This occurred because of shifts in climate and weather patterns [16].

Our research found that septicemia was the third most prevalent cause of fever with thrombocytopenia, whereas another study found that malaria was the fifth most common cause of this symptom. Fever and thrombocytopenia were not seen as a presenting feature of a haematological illness in our investigation, although they were seen in 15% of another. Both our study and the other study found that enteric fever was a major factor in patients seeking medical attention. Our study found that 15 percent of patients had Dengue/VHF infections, which is higher than the previous study's 13 percent [17].

Our study had a perfect diagnostic rate of 100%, while another study had an 18.3% diagnostic rate. In contrast to previous research, we found that 49 percent of our participants showed indications of thrombocytopenia. We found that spontaneous bleeding and Petichae/purpura were the most common signs of bleeding in our study. In contrast to previous research, which found that petichae/purpura were the most prevalent bleeding manifestations, spontaneous bleeding was the most common bleeding manifestation in this study [18].

We found that 65% of people in our trial had platelet counts in the 50-100 thousand range, up from 56.8 percent in the other study. In our study, 23% of participants and in another study, 25% of participants had platelet counts between 20000 and 50000. Platelet counts rose in 63.3% of people over the length of the study's follow-up, whereas 7.3% exhibited a steady decline. However, only 30% of patients were followed up on, despite the fact that the data showed rising platelet patterns both at the time of discharge and in subsequent follow-up [15, 19].

Infections were the leading cause of fever with thrombocytopenia, and due to seasonal and regional differences, malaria was the most common type of infection. In this case, treating the underlying reason led to a definitive rise in platelet count. The leading cause of death in our analysis was septicemia (85.7%), followed by dengue (14.3%) as second. A large proportion of patients with nonspecific fever and thrombocytopenia were found to have infectious illnesses. The vast majority of these people were infected with malaria, enteric fever, dengue, leptospirosis, or another virus. In cases where a condition is common in a certain area, a patient's response to a trial of empirical treatment could assist the doctor's subsequent care. Several viral hemorrhagic fevers will require new microbiological and pathological imaging techniques in the future for study and diagnosis. About 80% of people with malaria also have thrombocytopenia [14, 18].

In "thrombocytopenia in malaria-association with type and severity of malaria", UM Jadav found a link between malaria subtypes and the number of white blood cells present in patients. Twenty-one percent of patients had a normal platelet count. However, no patients with a normal platelet count were found in our n=41 investigation. In our and their research, we found that thrombocytopenia was only infrequently accompanied with clinical bleeding or biochemical indications of DIC.

In a study of thrombocytopenia in malaria, conducted by UM Jadav *et al.*, the authors found that its prevalence was 78.4% of cases and noted that a sustained platelet count is improbable in the laboratory findings of malaria. Forty-nine percent to ninety percent of patients in India with plasmodium falciparum infections experienced thrombocytopenia. Malaria's thrombocytopenia may result from DIC's consumption of and destruction to the periphery. A patient with vivax malaria and a claimed age of 43 has been recorded to have severe thrombocytopenia, with a platelet count as low as 5000/per cubic millimeter, in Indian literature [18, 19].

Conclusion

One of medicine's biggest concerns is fevers and blood cell loss. Rare disorders seldom produce fever with thrombocytopenia. Infections usually cause fever and low platelet levels. Malaria was the deadliest infectious disease. Atypical and concealed malaria, typhoid, and dengue symptoms postpone and complicate diagnosis. Clinics must be suspicious. Quick spot test; IgM ELISA for dengue and leptospiral antibodies, etc. are helpful. Most people had brief, symptom-free thrombocytopenia. Thrombocytopenia, which often caused bleeding symptoms, shaped these febrile diseases. Spontaneous bleeding patients should be evaluated for disseminated intravascular coagulation. Malaria patients do not need platelet transfusions since their platelet counts recover quickly following treatment.

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