Journal of Cardiovascular Disease Research
ISSN:0975-3583,0976-2833
VOL15,ISSUE06,2024

Prospective Analysis to Examine the Patients Diagnosed with Acute Fever and Thrombocytopenia

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Conflict of interest: No! Conflict of interest is found elsewhere considering this work.

Source of Funding: There was no financial support concerning this work

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Abstract

Background and Aim: The vast majority of diseases have a haematological finding known as thrombocytopenia, which can be found in the hemogram of affected individuals. The objective is to investigate the common causes of acute fever with thrombocytopenia, such as Dengue fever, Chikungunya fever, Malaria, and Leptospirosis, with a particular focus on the Indian subcontinent, using laboratory and immunological tests that are pertinent to the situation.

Material and Methods: For the purpose of the study, a total of fifty patients were recruited. A semi-structured questionnaire based on interviews was developed under the direction of an expert after a review of the relevant literature was conducted. All consecutive hospitalized patients who had fevers that lasted for less than seven days and thrombocytopenia were included in the study. The patients were then divided into three distinct categories after the

ISSN:0975-3583,0976-2833
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classification process. Accuracy of a diagnostic test can be evaluated by computing sensitivity, specificity, predictive values, and likelihood ratios.

Results: A total of 58% of the cases were brought on by dengue fever,32% were brought on by malaria, 8% were brought on by other fevers associated with thrombocytopenia, and two percent were brought on by chikungunya. The younger age group is more likely to experience fever with thrombocytopenia, and males are more likely to be affected than females. The patients who were between the ages of 12 and 30 made up 74% of the total population. The total number of patients who experienced bleeding was four.

Conclusion: The incidence of dengue fever is the most common cause. There was a seasonal variation in the cases, with the majority of cases occurring between the months of June and September. Fever and thrombocytopenia are the most common symptoms of dengue fever, which is the most common disease.

Key Words: Dengue, Fever. Malaria,Thrombocytopenia

Introduction

The health care community that operates in tropical environments is faced with the challenge of managing a wide range of infectious diseases that are not found anywhere else in their country. These diseases are unique to the tropical environment. A febrile illness that is acute and is accompanied by thrombocytopenia is one of the conditions that fall into this category.Because infections that are transmitted by vectors, that are caused by parasites, and that are caused by bacteria frequently present with symptoms that are not specific, the job of the clinician is extremely challenging. Infections that are caused by bacteria commonly present with symptoms that are not specific.[1,2]

In the clinical manifestations, permutations and combinations of a wide variety of symptoms are included. These symptoms include, but are not limited to, rash, arthralgia, backache, retro orbital pain, fever, headache, and so on. Before the patient is subjected to a variety of

ISSN:0975-3583,0976-2833
VOL15,ISSUE06,2024

laboratory investigations, which will assist the clinician in confirming the diagnosis and managing the case, the clinical diagnosis, which indicates the most probable cause of this condition, is required. Other laboratory investigations will be performed after the clinical diagnosis has been made. Furthermore, the results of these investigations have the potential to provide prognostic significance as well as indicators of complications in specific clinical conditions.[3,4]

In the process of conducting research on these diseases, it will be easier to gain a better understanding of these diseases and to be able to diagnose some of the most important infectious diseases that can be treated with greater precision.[5]

The vast majority of diseases have a haematological finding known as thrombocytopenia, which can be found in the hemogram of affected individuals. There is a high probability that these diseases are accompanied by fever that begins suddenly. On the list are the following: 1) Fever brought on by viruses, including but not limited to Dengue fever, Chikungunya fever, West Nile fever, Ebola fever, Hantavirus infection, mumps, Hepatitis B infection, Parvovirus B19, Lassa fever, and Kayasanur forest disease. 2) Malaria that is caused by the infectious agent known as Falciparum, which is a parasite. One example of a bacterial infection is the disease known as leptospirosis.[6,7]

Given that the nation is situated in a tropical region, the prevalence of tropical diseases poses a significant threat to the nation's social and economic development. This is because tropical diseases are particularly prevalent in tropical regions.[8,9] Therefore, conducting research on the tropical diseases that are currently prevalent would not only offer a more favorable outlook for the individual as well as the nation as a whole, but it would also contribute to the enhancement of the management guidelines that are utilized in the treatment of these diseases. As a result, the objective is to investigate the common causes of acute fever with thrombocytopenia, such as Dengue fever, Chikungunya fever, Malaria, and Leptospirosis,

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with a particular focus on the Indian subcontinent, using laboratory and immunological tests that are pertinent to the situation.

Materials and Methods

A prospective study was conducted in the department of medicine, medical college, and hospital, and the present study is the result of that study. For the purpose of the study, a total of fifty patients were recruited. Over the course of eight months, the research was carried out. In order to make things easier for you, the inclusion criteria are detailed down below.

Participants in this study are individuals who are currently hospitalized and have been complaining of fever for a period of less than seven days, in addition to conditions that are associated with thrombocytopenia.

A minimum age requirement of twelve years old is imposed on individuals who are not eligible for participation.

A person who is experiencing fever and whose platelet count is within the normal range is considered to be in a healthy condition. A person who was excluded from the study was a person who was suffering from a clinical condition that was identified as the patient's condition. This condition could be a chronic liver disease, deep vein thrombosis, or any other type of bleeding disorder.

All of the patients gave their written consent after being fully informed. With the help of a standardized data collection sheet, their clinical characteristics were documented for each and every patient. For the purpose of data collection, a semi-structured questionnaire based on interviews was developed under the direction of an expert after a review of the relevant literature was conducted. The data collection sheet also requested information regarding the patients' demographics, the number of days they had been feverish, and the symptoms they were experiencing.

For the purpose of this study, all consecutive hospitalized patients who had fevers that lasted

ISSN:0975-3583,0976-2833
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for less than seven days and thrombocytopenia were included in the study. The patients were then divided into three distinct categories after the classification process.

With mild thrombocytopenia, the count of white blood cells can range from less than 150,000 to more than 100,000/mcl. There is a range of less than 100,000 to more than 50,000/mcl for the severity of the thrombocytopenia, which is considered to be moderate. One who has a count of less than 50,000/mcl and is suffering from severe thrombocytopenia.

First, the patient was seropositive for dengue IgG and IgM, with an IgG titer that increased by four times.

2. Positive for both leptospirosis IgG and IgM seropositive

3. Positive for Chikungunya virus antibodies IgG and IgM

4. A test for the rapid detection of malaria antigen Positive statistics: the accuracy of a diagnostic test can be evaluated by computing sensitivity, specificity, predictive values, and likelihood ratios. The accuracy of these estimates is evaluated with the help of confidence intervals that are 95% accurate.

Results

A total of 50 patients who all presented with fever and thrombocytopenia were included in the research study. These patients were chosen at random. Some of the most common diseases that manifest themselves as fever with thrombocytopenia are dengue fever, malaria, and chikungunya. For each of the fifty patients, CBC, clinical, and biochemical parameters were under investigation.

Fever, vomiting, abdominal pain, chest pain, cough, breathlessness, hemoptysis, loose motion, headache and body ache, arthritis, bleeding tendency, anaemia, pallor, icterus, oedema, and lymphadenopathy were some of the common signs and symptoms that were observed in this study.

There is a seasonal variation in the occurrence of fevers with thrombocytopenia, and the

ISSN:0975-3583,0976-2833
VOL15,ISSUE06,2024

number of cases increases during the rainy season. The majority of the cases were reported between the months of June and September, with the highest number of cases occurring during the months of August and September. This suggests that these illnesses are associated with the rainy season due to the breeding habits of vectors for the arbovirus, parasites, and other potentially infectious diseases.

The younger age group is more likely to experience fever with thrombocytopenia, and males are more likely to be affected than females. The patients who were between the ages of 12 and 30 made up 74% of the total population. This is because they are the most active group and are not confined to a single controlled environment. Therefore, measures to restrict the spread of the disease ought to be implemented on a massive scale.

Leucopenia and moderate to severe thrombocytopenia with partial thrombocytopenia (PDW) greater than 12 fl are indicative of dengue fever. On the other hand, a normal or raised white blood cell count and mild thrombocytopenia with PDW less than 12 fl are indicative of malaria.

PDW, which stands for platelet distribution width, was found to be elevated in patients who had bleeding that was indicative of hyper destructive thrombocytopenia. This condition is characterized by a disruption in platelet activity.

The thrombocytopenia that occurs in patients who test positive for dengue IgM typically recovers between the eighth and tenth day of illness, which coincides with the clinical improvement that occurs. Therefore, it is recommended that all patients who test positive for dengue IgM be monitored for a minimum of seven days.

Table 1: Case distribution in the study group

Case Distribution	Total (n=50)
Dengue IgM	20

ISSN:0975-3583,0976-2833
VOL15,ISSUE06,2024

Dengue IgG	9
P.Vivax	12
P.Falciparum	4
Chikungunya	1
Other fever with thrombocytopenia *	4

***Acute Viral fever, Enteric fever, Acute viral hepatitis**

Discussion

The examination of fifty patients revealed that they were suffering from acute fever and thrombocytopenia. This was discovered after the patients were examined. Fifty patients were examined in total during the course of the study. A total of 58% of the cases were brought on by dengue fever,32% were brought on by malaria, 8% were brought on by other fevers associated with thrombocytopenia, and two percent were brought on by chikungunya. (Table 1) There was not a single instance of leptospira, according to the documentation that was gathered. In contrast to the findings that we obtained, a study that was conducted in Uttar Pradesh by Praveen Kumar and KalpnaChandra reveals that there were 32.33% cases of malaria and 15.78% cases of dengue. Both of these figures differ from the findings that we obtained. Furthermore, there were 6.31 percent of cases of other fevers that were accompanied by thrombocytopenia, which is closely related to this study.[9]

Out of the four patients who experienced bleeding, fifty percent of them complained of malena. The total number of patients who experienced bleeding was four. Fifty percent of the patients experienced subconjunctival hemorrhage, and twenty-five percent of the patients experienced hemoptysis. Both of these complications were experienced by the patients. In this particular study, only eight percent of patients reported bleeding, which is in stark contrast to the seventy percent of patients who reported bleeding in a study that was

ISSN:0975-3583,0976-2833
VOL15,ISSUE06,2024

conducted at the All India Institute of Medical Sciences (AIIMS) by Sharma et al.[10] This study's findings were found to have a significant correlation with the findings of the AIIMS study, which found that 36.5% of patients had skin rashes. This correlation was found to be extremely significant. Concurrently, this study was carried out at the same time. According to the findings of the manglore study that was conducted by V.S. Padabidri, 46 percent of patients reported experiencing pain in the reto orbital region. According to the findings of this same study, this percentage, which was discovered to be 48 percent, is in close correlation with the findings.[11]

It was necessary to observe the presence of thrombocytopenia in each and every patient in order to fulfill the requirements for participation in the study with the intention of fulfilling the criteria. Thirty percent of the cases were found to have severe thrombocytopenia, forty percent of the cases had moderate thrombocytopenia, and thirty percent of the cases had relatively mild thrombocytopenia. In 24% of the cases, the haematocrit was found to be lower than 30, while in 48% of the cases, it was found to be higher than 40. This information was derived from the data that was presented.

There were no indications that there was a leak of plasma in 48 percent of the patients as a result of the examination. It was found that there was evidence of plasma leakage in fifty-two percent of the patients. Thirty percent of the cases that tested positive for dengue IgM exhibited signs of plasma leak. These cases were found in the patient population. However, only twelve percent of the cases tested positive for dengue IgG and showed signs of plasma leak. This is a significant difference. If there are any indications that plasma is leaking out, there is a possibility that there will be a loss of third space.

Only fifteen percent of patients who tested positive for dengue IgM exhibited mild thrombocytopenia on the ninth day, while their platelet count remained normal on the tenth day. This was the case even though the patients had taken dengue IgM. The information that

ISSN:0975-3583,0976-2833
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has been provided makes this abundantly clear. Patients who tested positive for dengue IgM had normal platelet counts on the eighth day, and forty percent of patients had normal platelet counts on the ninth day from the time the test was performed. This indicates that the majority of patients who tested positive for dengue IgM had normal platelet counts. Platelet counts that fall within the range of 150000 to 450000/mcl are considered to be within the normal operating range.

Conclusion

It is more common for younger people, between the ages of 12 and 30, to have fever with thrombocytopenia, and the majority of those affected are males. The incidence of dengue fever is the most common cause. There was a seasonal variation in the cases, with the majority of cases occurring between the months of June and September. Patients with dengue fever who also have thrombocytopenia have a higher prevalence of PDW. Signs of plasma leakage, such as ascites and pleural effusion, are more commonly associated with dengue fever. These signs can be demonstrated by the loss of third space. Fever and thrombocytopenia are the most common symptoms of dengue fever, which is the most common disease.

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