

# Clinical and Laboratory Evaluation of Patients with Fever with Thrombocytopenia

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## ABSTRACT

**Aims:** To evaluate clinical profile of fever with thrombocytopenia. To identify the causes of fever with thrombocytopenia. To assess the clinical complications associated with fever and thrombocytopenia. **Material and methods:** This study was done on patients, who were admitted to Sir T Hospital and Government Medical College, Bhavnagar, Gujarat. We prospectively collected a series of 100 patients with fever and thrombocytopenia. **Results:** *Age and sex distribution:* In this study, males outnumbered females. *Platelet count and bleeding:* Of 100 patients, four had bleeding manifestations. There was no correlation between platelet count and bleeding. *Degree of thrombocytopenia in various diseases:* (1) *Viremia:* Among infectious cases, viremia including dengue accounted for the vast majority. In this study, out of 100 cases viremia including dengue accounted for 52 cases. (2) *Dengue:* In our study, dengue caused severe thrombocytopenia. Twenty patients out of 40 cases had count <50,000/mm<sup>3</sup>. (3) *Malaria:* In our study, malaria caused mild-to-moderate thrombocytopenia with counts remaining between 50,000 to 1 lacs in most cases. *Bleeding manifestations:* In our study, out of 100 patients only four patients presented with bleeding manifestations. Three patients of mixed *Plasmodium vivax* with *Plasmodium falciparum* malaria presented with petechiae, purpura and hematuria. One patient of dengue presented with gum bleeding. *Platelet count and fever:* In this study, shortest duration of fever was 3 days and longest was 10 days. Platelet count started increasing from 2nd day of admission to 8th day of admission with relative treatment. *Enteric fever:* In our study, out of 100 patients, three had fever with thrombocytopenia without any bleeding manifestations.

**Keywords:** Dengue, malaria, viremia, enteric fever, hematuria

Fever is a pervasive and ubiquitous theme in human myth, art and science. Fever is such a common manifestation of illness that it is not surprising to find. New interest has surfaced in the relationship between body temperature and disease. Interleukin (IL)-1 has now been shown to have a major role in thermoregulation.

## AIMS AND OBJECTIVES

- To evaluate clinical profile of fever with thrombocytopenia.
- To identify the cause of fever with thrombocytopenia.
- To assess the complications associated with fever and thrombocytopenia.

## MATERIAL AND METHODS

This study was done on patients, who were admitted to Sir T Hospital and Government Medical College, Bhavnagar, Gujarat. We prospectively collected a series of 100 patients with fever and thrombocytopenia.

### Inclusion Criteria

The patients of both sexes aged >12 years were included. Patients admitted with fever and found to have thrombocytopenia were included in the study.

### Exclusion Criteria

Patients <12 years were excluded. Patients with fever and no thrombocytopenia were not included. Patients with thrombocytopenia and no fever were not included.

### Method

Once the patients admitted with fever who had thrombocytopenia were included, a careful history was recorded and general physical examination was done. Detailed examination of various systems was done. Routine investigation was done; specific and special investigations were done as and when indicated.

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Patients in whom a final definite diagnosis was reached, were treated for the disease and platelet count was repeated at the time of discharge. Details of history, general physical examination and laboratory and technical investigation reports were noted down from time to time. Once the specific diagnosis was reached, patients were treated for it specifically and symptomatically.

## RESULTS

In our study, out of 100 patients, 52 were having dengue (37 M, 15 F), 21 patients were having *Plasmodium vivax* malaria (16 M, 5 F), 21 patients were having *Plasmodium falciparum* malaria (15 M, 6 F), three male patients were having mixed *P. vivax* and *P. falciparum* malaria, three patients were having enteric fever (2 M, 1 F) (Table 1 and Fig. 1).

**Table 1.** Distribution of Disease

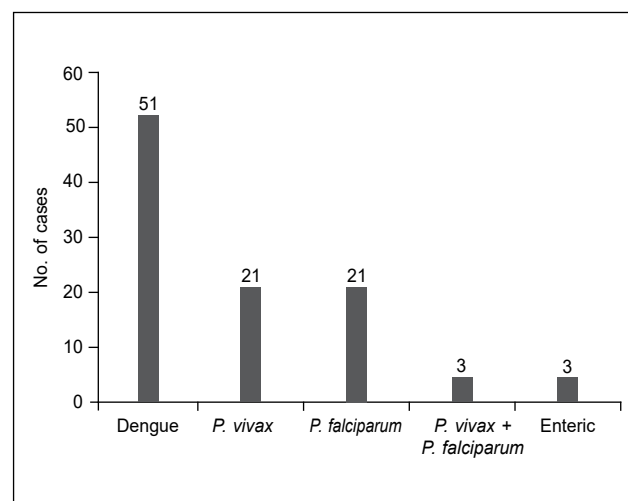
Age	Male	Female	Disease	Total
12-30 years	29	11	Dengue	40
30-45 years	6	2	Dengue	8
45-60 years	2	1	Dengue	3
>60 years	0	0	Dengue	0
12-30 years	12	1	<i>P. vivax</i>	13
30-45 years	2	3	<i>P. vivax</i>	5
45-60 years	2	1	<i>P. vivax</i>	3
>60 years	0	0	<i>P. vivax</i>	0
12-30 years	8	2	<i>P. falciparum</i>	10
30-45 years	3	1	<i>P. falciparum</i>	4
45-60 years	2	1	<i>P. falciparum</i>	3
>60 years	2	2	<i>P. falciparum</i>	4
12-30 years	1	1	Enteric fever	2
30-45 years	1	0	Enteric fever	1
45-60 years	0	0	Enteric fever	0
>60 years	0	0	Enteric fever	0
12-30 years	1	0	<i>P. vivax</i> + <i>P. falciparum</i>	1
30-45 years	1	0	<i>P. vivax</i> + <i>P. falciparum</i>	1
45-60 years	1	0	<i>P. vivax</i> + <i>P. falciparum</i>	1

## Age and Sex Distribution

In our study, males were affected more than females. Young males (12-30 years) were affected more than young females (12-30 years) (Table 2 and Fig. 2).

## Degree of Thrombocytopenia in Various Diseases

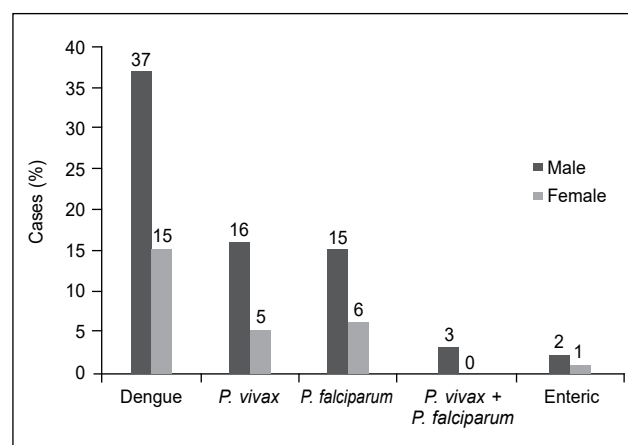
In our study, dengue was the commonest cause. Lowest platelet count in each disease and its relation to male and female is shown in Table 3.



**Figure 1.** Distribution of disease.

**Table 2.** Sex-wise Distribution of Cases

Disease	Male (%)	Female (%)	Total (%)
Dengue	37	15	52
<i>P. vivax</i> malaria	16	5	21
<i>P. falciparum</i> malaria	15	6	21
<i>P. vivax</i> + <i>P. falciparum</i> malaria	3	0	3
Enteric fever	2	1	3



**Figure 2.** Male and female distribution of disease.

**Table 3. Sex-wise Platelet Count**

Disease	Lowest platelet count in male	Lowest platelet count in female
Dengue	10,000	13,000
<i>P. vivax</i> malaria	28,000	20,000
<i>P. falciparum</i> malaria	12,000	25,000
Enteric fever	90,000	50,000

**Table 4. Relationship Between Day of Fever and Platelet Count**

Disease	Day of admission with lowest platelet count	Day of admission with normal platelet count
Dengue	1-2	4-5
<i>P. vivax</i> malaria	1-2	4-5
<i>P. falciparum</i> malaria	1-3	4-7
Enteric fever	1-2	4-5

**Table 5. Relation of Month of Year and Number of Cases for Each Disease**

Disease	No. of cases in October	No. of cases in November	No. of cases in December
Dengue	10	22	20
Malaria	12	18	12
Enteric fever	02	01	00

**Relation Between Day of Fever and Platelet Count**

In our study, low platelet count was seen on the day of admission, which started rising from Day 3 to 4, and reached to normal value on average of 4 to 7 days of admission (Table 4).

**Relation of Season (Month of Year) and Number of Cases for Each Disease**

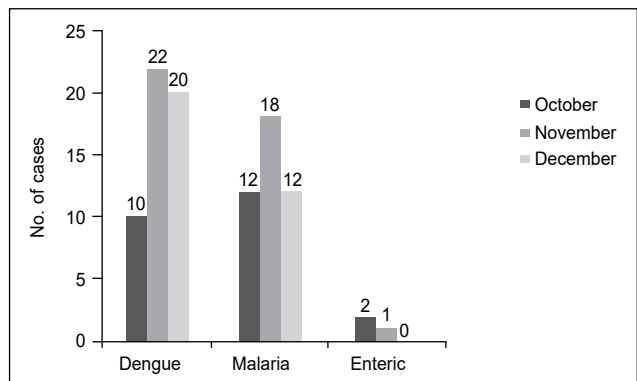
In our study, maximum number of cases of fever with thrombocytopenia were seen mainly during rainy and early winter season (Tables 5 and 6; Fig. 3).

**CONCLUSION**

Febrile illness accounts for large number of cases with thrombocytopenia. Incidence is more in males compared to females. Maximum prevalence is in the younger age group; 66% of cases were seen in 12-30 years age group in our study. Least prevalence was in elderly age group (10%). Fever was the presenting

**Table 6. Relation of season to Number of Cases for Each Disease**

Disease	Season
Dengue	Rainy/Winter
Malaria	Rainy/Winter
Enteric fever	Rainy/Winter



**Figure 3. Seasonal distribution of disease.**

complaint in all 100 cases. Bleeding manifestations were very rarely seen in our study.

Patients who had hematuria had relatively low platelet count, <20,000/mm<sup>3</sup>. Viremia was the commonest cause of thrombocytopenia in our study including dengue (52% of cases). Bleeding time had no relation to platelet count or bleeding manifestation. No mortality was seen in our study. *P. vivax* malaria accounted for 21% of cases and *P. falciparum* malaria for 21% of cases. Mixed infection, i.e., combined *P. vivax* and *P. falciparum* malaria accounted for 3% of cases. Bacterial infection accounted for 3% of cases of fever with thrombocytopenia. Thrombocytopenia due to infectious diseases showed seasonal variation, commonly seen in rainy and winter season.

**SUMMARY**

- Thrombocytopenia is a commonly observed hematological entity.
- Viremia accounts for most cases.
- Platelet count should be asked in cases with fever.
- Thrombocytopenia has no correlation to mortality and morbidity.
- There is no relation between platelet count and bleeding manifestations.
- The condition in which thrombocytopenia develops has an important influence on bleeding

when associated with infection or uremia; bleeding can occur even with mildly reduced counts as additional functional defects contribute.

- ➔ Thrombocytopenia due to infectious diseases shows seasonal variation, commonly seen in rainy and winter season.

### SUGGESTED READING

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### Spending on Health Increases Faster than Rest of Global Economy

Spending on health is outpacing the rest of the global economy, particularly in low- and middle-income countries, the WHO said. According to the UN health agency, "countries are spending more on health, but people are still paying too much out of their own pockets". The agency's new report on global health expenditure reveals that "spending on health is outpacing the rest of the global economy, accounting for 10% of global gross domestic product (GDP). The trend is particularly noticeable in low- and middle-income countries where health spending is growing on average 6% annually compared with 4% in high-income countries.

Health spending is made up of government expenditure, out-of-pocket payments and other sources, such as voluntary health insurance and employer-provided health programs. While reliance on out-of-pocket expenses is slowly declining around the world, the report notes that in low- and middle-income countries, domestic public funding for health is increasing and external funding in middle-income countries, declining... (WHO, February 20, 2019)

### India could be Cervical Cancer Free by 2079

Cervical cancer could be eliminated as a public health problem in India within the next 60 years by making existing prevention programs such as the human papillomavirus (HPV) vaccine and cervical screening more accessible. The estimates, which are the first of their kind at a global-scale, indicate that up to 13.4 million cases of cervical cancer could be prevented within 50 years if intervention strategies are scaled-up by 2020. The average rate of annual cases across all countries could fall to less than 4 cases per 1,00,000 women by the end of the century -- which is a potential threshold for considering cervical cancer to be eliminated as a major public health problem.

For countries with medium levels of development, including India, Vietnam and the Philippines, this could be achieved by 2070-79, according to the study published in *The Lancet Oncology* journal... (The New Indian Express-PTI, February 21, 2019)