

## **Thrombocytopenia in Patients of Malaria – Correlation with Type of Malaria and Its Clinical Significance.**

Dr. Hardik Patel<sup>1</sup>, Dr. Saurabh Borkhade<sup>2</sup>, Dr. Sandeep Rai<sup>3</sup>

<sup>1</sup>Senior Resident, <sup>2</sup>Third Year Resident, <sup>3</sup>Professor

<sup>123</sup> Authors are affiliated in the DEPARTMENT OF GENERAL MEDICINE AT MGM MEDICAL COLLEGE AND HOSPITAL, NAVI MUMBAI

Corresponding Author: - Dr. Saurabh Borkhade

MBBS, 3<sup>rd</sup> Year resident in DEPARTMENT OF GENERAL MEDICINE AT MGM MEDICAL COLLEGE AND HOSPITAL, NAVI MUMBAI

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### **I. Introduction**

Thrombocytopenia is a disorder in which there are too few platelets in the blood. Platelets are small, disk-shaped cellular structures in the bloodstream that help the blood to clot. Thus thrombocytopenia is often characterised by excessive bleeding, including epistaxis and easy bruising. Thrombocytopenia can be diagnosed by a routine blood test. Thrombocytopenia arises for one of three reasons, the bone marrow may not produce enough platelets, too many platelets may be destroyed in the spleen, thrombocytopenia can be caused by a variety of conditions.

Three major pathophysiological mechanisms in thrombocytopenia are decreased platelet production, increased platelet destruction or consumption, or increased splenic sequestration (capturing of circulating platelets in the spleen). In adults, thrombocytopenia is a condition in which the platelet count falls below 1,50,000/mL. Cases are considered mild if counts are between 60,000 and 1,50,000/mL, moderate if between 20,000 and 60,000/mL, and severe if less than 20,000/mL. Patients with a platelet count greater than 50,000/mL often are asymptomatic. Patients with a platelet count from 30,000 to 50,000/mL rarely present with purpura, although they may have excessive bleeding with trauma.

Studies have shown significant association between malaria and thrombocytopenia; the incidence of which ranges from 40.5-85%.<sup>1</sup>Nair et al., carried out a study of fever associated with thrombocytopenia and found out that the most common manifestation was purpura, followed by gum bleed and epistaxis.<sup>2</sup>

### **Aim and Objectives**

Thrombocytopenia in patients of malaria and its correlation with type of malaria and its clinical significance in patients of fever attending M.G.M Hospital Kamothe, Navi Mumbai

### **II. Material and Methods**

This prospective observational study was conducted on 100 patients of fever with thrombocytopenia attending to M.G.M Hospital Kamothe, Navi Mumbai during the period from November 2016 to October 2018. Diagnosed malaria patients with thrombocytopenia i.e. platelet count of < 1.5 lakhs were enrolled in the study. Patients with known Inherited causes for thrombocytopenia, patients on drugs causing thrombocytopenia, known Autoimmune causes for thrombocytopenia, HIV infection, leukaemias and myelodysplastic syndromes and other blood dyscrasias were excluded.

### **III. Methodology**

Patients presenting to department of medicine in OPD or Emergency ward with complaints of Fever, and on investigation found to be having thrombocytopenia were screened for this study and those fulfilling Inclusion criteria were enrolled in the study after obtaining informed consent.

Patients were selected with the Simple random sampling method. Patients taken up for the study, and their details were entered in semi-structured proformas which included sociodemographic details, clinical history of patients, general and systemic examination, and Investigations. Further follow of patients in regard to their clinical prognosis and Investigations including Platelet count were taken on regular interval, and depending on their clinical profile. Meanwhile, simultaneous records of diagnosis, treatment, prognosis were made as usual. Records were collected for 100 patients and then analyzed statistically through SPSS.

**Statistical Analysis**

All the collected data was entered in Microsoft Excel sheet and then transferred to SPSS software ver. 17 for analysis. Qualitative data was presented as frequency and percentages and analysed using chi-square test. P-value < 0.05 was taken as level of significance

**IV. Results**

**Table no 1 Demographic profile**

| Age group            | Frequency | Percent |
|----------------------|-----------|---------|
| 16 to 25 years       | 46        | 46      |
| 26 to 35 years       | 30        | 30      |
| 36 to 45 years       | 9         | 9       |
| more than 45 years   | 15        | 15      |
| Sex                  | Frequency | Percent |
| Female               | 19        | 19      |
| Male                 | 81        | 81      |
| Clinical features    | Frequency | Percent |
| Fever                | 100       | 100     |
| Chills/Rigors        | 98        | 98      |
| Vomiting             | 40        | 40      |
| Headache             | 27        | 27      |
| Cough/Breathlessness | 18        | 18      |

The most common age group amongst study population was 16 to 25 years (46%) followed by 26 to 35 years (30%) , more than 45 years (15%) and 36 to 45 years (9%). There was male predominance (81%) amongst study population as compared to female (19%).

Fever (100%) was the most common clinical features amongst study population followed by chills/rigors (98%) , vomiting (40%) and headache (27%). Splenomegaly andhepatomegaly was present in 7 % and 13 % of study population respectively.

Vivax Malaria (66 %) was the most common peripheral smear findings amongst study population followed by falciparum malaria (26%) and mixed malaria (8%). Prothombintime and INR was derranged in 66% and 37% of study population respectively

Most of the study population had platelet count of1-1.5 lakh/cumm (47%)followed by 50000-1lakh/cumm(39%) and less than 50,000/cumm (14%).

Out of 66 cases detected with vivax malaria, 63% cases had platelet count of1-1.5 lakh/cumm, 66% cases had 50000-1lakh/cumm and 71% cases had less than 50,000/cumm. Out of 26 cases detected with falciparum malaria, 20% cases had platelet count of1-1.5 lakh/cumm, 15% cases had 50000-1lakh/cumm and 4% cases had less than 50,000/cumm. Out of 8 cases detected with mixed malaria, 19% cases had platelet count of1-1.5 lakh/cumm, 20% cases had 50000-1lakh/cumm and 23% cases had less than 50,000/cumm.

Blood product transfusion was given in 7.4% of study population. Less than 10 days of hospital stay was observed in 94% of the study population while more than 10 days of hospital stay was observed in 6% of study population.

**V. Discussion**

Thrombocytopenia (TCP) refers to a reduction in platelet count below 1.5lakh/microlitre..<sup>3</sup> It is the commonest platelet abnormality encountered in clinical practice with variable clinical expression. With the widespread use of automated cell counters clinicians in any field may encounter TCP. The symptomatology may vary greatly and the underlying cause may be either inconsequential or life threatening. <sup>4</sup> In a tropical country like India infectious causes predominate and are usually associated with fever.<sup>2</sup> TCP may give a clue to presence of infections like malaria, dengue, leptospirosis and viral infections.

Febrile thrombocytopenia is a distinct clinical entity, commonly encountered in infectious diseases. A number of infections such as malaria, dengue fever, scrub typhus, leptospirosis, chickungunya, enteric fever, bacterial and fungal sepsis as well as certain other viral infections result in thrombocytopenia. The varied etiological profile and unpredictable clinical outcome often poses a diagnostic as well as therapeutic challenge to clinicians.

**Age group**

In the present study, 16 to 25 years (46%) was the most common age group amongst study population followed by 26 to 35 years (30%) , more than 45 years (15%) and 36 to 45 years (9%). This findings is in agreement with the study conducted by Yasmeeen Khatib et al., in which there were 68 cases (22.67%) seen in the 21-30 year age group followed by 58 patients in the 31-40 year age group.(19.33%).<sup>5</sup>This findings is also in agreement with the study conducted by SmitaMasamatti et al ., in which the commonest age group affected was

between 18 to 36 years (48.27%), the reason for this increased incidence in males and younger age group in the given locality has been attributed to the prolonged outdoor activities and increased chances of exposure to mosquitoes and also majority of the women being homemaker.<sup>6</sup> In another study by Shah et al maximum cases of thrombocytopenia were also found in the 21-30 years age group and male preponderance was seen as in our study.<sup>7</sup>

### **Sex**

In the present study, there was male predominance (81%) amongst study population as compared to female (19%). This findings is in agreement with the study conducted by Yasmeen Khatib et al., in which there were 176(58.67%) males and 124(41.33%) females.<sup>5</sup> According to another study by Badvi A. J. et al, male to female ratio was 64:36 and 77% of patients were in age group under 10 years.<sup>8</sup> Similar sex distribution was seen in certain local and international studies.<sup>9-11</sup>

### **Clinical features**

In the present study, Fever (100%) was the most common clinical features amongst study population followed by chills/rigors (98%), vomiting (40%) and headache(27%). This findings is in agreement with the study conducted by Yasmeen Khatib et al., in which the main presenting features in patients with TCP were fever 205 cases (68.3%).<sup>5</sup>In another study by Ahmed S et al study, frequently noted clinical features included fever (97%), vomiting (68%), abdominal pain (68%) and rashes (65%).<sup>10</sup>

### **Examination findings**

In the present study, Splenomegaly andHepatomegaly was present in 7 % and 13 % of study population respectively. This findings is in agreement with the study conducted by Yasmeen Khatib et al., in which hepatomegaly 48 cases (16%), splenomegaly 46 cases (15.3%).<sup>5</sup>

### **Peripheral smear findings**

In the present study, Vivax Malaria (26 %) was the most common Peripheral smear findings amongst study population followed by Falciparum Malaria (1%) and Mixed malaria (1%). This findings is in agreement with the study conducted byGuruprasada Shetty et al study,<sup>30</sup> Plasmodium vivax found in 66%, Plasmodium falciparum in 16% and mixed in 18% of cases.<sup>12</sup> This findings is in agreement with the study conducted by Naveen Kulkarni et al., vivax malaria, falciparum and mixed infections were noted in 53.2%, 26.6% and 19 % cases respectively.<sup>13</sup>

### **Platelet count**

In the present study, most of the study population had platelet count of 50000-1lakh/cumm (39%) followed by 1-1.5 lakh/cumm (37 %) and less than 50,000/cumm (24%). This findings is in agreement with the study conducted by Bhalara, et al in which out of 109 patients, 62 (56.8%) had platelet count between 50,000 and 1,00,000, followed by 28 (25.7%) patients who had count between 20,000 and 50,000. <sup>14</sup>This findings is in agreement with the study conducted by Yadav et al., most of the study population had platelet distribution 50,001-1, 00,000/cumm was seen in 53.8% cases.<sup>15</sup> Similar results (56.8%) were obtained in Nair PS et al study for this platelet distribution range.<sup>2</sup>

### **Morbidity**

Blood Product Transfusion was given in 7.4% of study population. In a study by Anubha Sharma blood product transfusion was given in 38% of cases.<sup>16</sup>

In the present study, 94% of the study population had Less than 10 days of hospital stay while More than 10 days of hospital stay was observed in 6% of study population

### **Platelet count vs Type of malaria**

Out of 66 cases detected with vivax malaria, 63% cases had platelet count of 1-1.5 lakh/cumm, 66% cases had 50000-1lakh/cumm and 71% cases had less than 50,000/cumm. Out of 26 cases detected with falciparum malaria, 20% cases had platelet count of 1-1.5 lakh/cumm, 15% cases had 50000-1lakh/cumm and 4% cases had less than 50,000/cumm. Out of 8 cases detected with mixed malaria, 19% cases had platelet count of 1-1.5 lakh/cumm, 20% cases had 50000-1lakh/cumm and 23% cases had less than 50,000/cumm. This findings is in agreement with the study conducted by Narendra Kumar Gupta et al., in which Out of 130 cases detected with vivax malaria, 100 cases had thrombocytopenia. Out of 90cases detected with falciparum malaria, 70 cases had thrombocytopenia.<sup>17</sup> Among 10 cases of mixedinfection, 9 cases had thrombocytopenia.Faseela et al., in herstudy found similar results.<sup>18</sup>

## VI. Conclusion

Malaria is the most common diagnosis made in adult patients who present with fever and are detected to have thrombocytopenia at admission after dengue. Most of the study population had platelet count of 50000-1lakh/cumm (39%) followed by 1-1.5 lakh/cumm (37 %) and less than 50,000/cumm (24%). In malaria, P. vivax was most common followed by P. falciparum infection and then mixed infection. Thrombocytopenia was observed most commonly in P vivax followed by P Falciparum and mixed infection.

## References

- [1]. Murthy GL, Sahay RK, Srinivasan VR, Upadhaya AC, Shantaram V, Gayatri K. Clinical profile of falciparum malaria in a tertiary care hospital. J Ind Medic Assoc. 2000;98(4):160-2
- [2]. Nair PS, Jain A, Khanduri U, Kumar V. A study of fever associated with thrombocytopenia. J Assoc Physicians of India. 2003; 51:1151-73.
- [3]. Platelet and Blood vessel disorders. In: Richard E Behrman, Robert M Kliegman, Hal B Jensen, eds. Nelson Textbook of Pediatrics, 17th Edition. Saunders, 2004: 1770 – 77.
- [4]. SekhonSS,RoyVivek.Thrombocytopenia in adults:A practical approach to evaluation and management.Southern medical journal.2006;vol99(5) 491-498.
- [5]. Yasmeen Khatib1 , Dr. Vaishali Jain2 , Dr. Richa Patel, One year study of thrombocytopenia in a peripheral hospital of Mumbai, Volume 6, Issue 4 (April 2016), PP. 26-30
- [6]. Smita Surendra. Masamatti et al., Laboratory and Etiological Profile of Febrile Thrombocytopenia Cases, National Journal of Laboratory Medicine. 2016 Jul, Vol-5(3): PO44-PO48
- [7]. Shah HR,VaghaniBD,GohelP,ViraniBK.Clinical profile review of patients with thrombocytopenia:A study of 100 cases at a tertiary care centre.Int J Cur Res Rev.2015;vol 7 (6):33-37.
- [8]. Jawed Ahmed Badvi, BahawaluddinJamro, Aftab Ahmed Soomro, Shankar Lal,SaifullahJamro. An experience of thrombocytopenia in children at tertiary care hospitals sukkur and larkana MC. 2012;19:23-26.
- [9]. Kuhne T, Berchtold W, Michaels LA, Wu R, Donato H et al. Newly diagnosed immune thrombocytopenia in children and adults: a comparative prospective observational registry of the International Cooperative Immune Thrombocytopenia Study group.Haematologica J. 2011;96:1831-1837.
- [10]. Ansari S, Khoharo HK, Abro A, Akhund IA, Qureshi F. Thrombocytopenia in plasmodium malaria. J Ayub Med Coll Abbottabad. 2009;21:145-147.
- [11]. Kibria SG, Islam MDU, Chowdhury AJ, Ali MY, Haque MR, Mustanzid SM, Ali SY. Prevalence of hematological disorder; A bone marrow study of 177 cases in a private hospital at Faridpur. Faridpur Med Coll J. 2010;5:11-13.
- [12]. Guruprasada Shetty et al.,Thrombocytopenia in children with malaria–A study from coastal Karnataka, India, Asian Pacific Journal of Tropical DiseaseVolume 2, Issue 2, April 2012, Pages 107-109
- [13]. Naveen Kulkarni et al / A clinical study of febrile thrombocytopenia at a Tertiary Care Hospital in North Karnataka , IJBR 2017; 08:01
- [14]. Bhalara SK, Shah S, Goswami H, Gonsai RN. Clinical and etiological profile of thrombocytopenia in adults: A tertiary-care hospital based crosssectional study. Int J Med Sci Public Health. 2015;4:7-10.
- [15]. Vishal Yadav, Abhishek Singhai, Study of febrile thrombocytopenia in Malwa region of India Asian Journal of Medical Sciences,2017 ; Vol 8;Issue 5:83-87
- [16]. Anubha Sharma et al., A prospective observational study of thrombocytopenia in high risk neonates in a tertiary care teaching hospital, Sri Lanka Journal of Child Health, 2015: 44(4): 213-219
- [17]. Narendra Kumar Gupta, Study of thrombocytopenia in patients of malaria,Trop Parasitol. 2013 Jan-Jun; 3(1): 58–61.
- [18]. Faseela TS, Roche, Anita KB, Malli CS, Rai Y. Diagnostic value of platelet count in malaria. J ClinDiagn Res. 2011;5:464–6.

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