



CODEN [USA]: IAJPB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2599464>Available online at: <http://www.iajps.com>

Research Article

**A RESEARCH STUDY TO COMPARE THE SPECIES OF
MALARIA PARASITES AND THROMBOCYTOPENIA DEGREE**¹Dr Sundas Jahangir, ²Dr Muhammad Almas Murad, ³Dr Nazish Iqbal¹WMO DHQ Jhang, ²Medical Officer, DHQ Sheikhpura, ³WMO, Rural Health Centre Pacca Larran, Khanpur, Rahim Yar Khan.**Article Received:** January 2019**Accepted:** February 2019**Published:** March 2019**Abstract:**

Background: In Pakistan, the death of the people is mostly affected due to malaria. In various parts of the world, there found variations in the incidence of malaria. On laboratory examination, anaemia, leucopenia and thrombocytopenia indicate malaria. Whereas, in the clinical checkup, headache, acute renal failure, joints pain, dizziness, hepatopathy, congenital malaria, chills and fever with rigours are some factors that mark the presence of malaria.

Objective: This study was conducted on the patients of malaria in order to determine the frequency of thrombocytopenia and kinds of parasites found among patients of malaria.

Materials and Methods: This research study was conducted in the timeframe of September 2017 to October 2018 at Services Hospital, Lahore. The people at the risk of having malaria were selected for this research. Malaria identification was made on the basis of laboratory parameters (thick and thin film), history and physical assessment. SPSS was used for data entry and assessment.

Results: Total patients selected for this research study were 273 with malaria identification among 190 patients (69.6%). Falciparum malaria and Plasmodium Vivax effected 45 patients (23.7%) and 145 patients (76.3%) respectively. Falciparum species infected 33 (21.8%) patients, the species of vivax infected 118 (78.1%) patients and thrombocytopenia were observed in 151 (79.5%) patients out of 190 patients.

Conclusion: Based on the outcomes, it is illustrated that Vivax and Falciparum malaria is found in most of the patients of the target area. Different frequency of thrombocytopenia was also present in the majority of the patients.

Keywords: Falciparum, Vivax, Species, Malaria, Thrombocytopenia and Plasmodium.

Corresponding author:**Dr. Sundas Jahangir,**
WMO DHQ Jhang.

QR code



Please cite this article in press Sundas Jahangir et al., A Research Study To Compare The Species Of Malaria Parasites And Thrombocytopenia Degree., Indo Am. J. P. Sci, 2019; 06(03).

INTRODUCTION:

All around the globe, the health of people is affected by malaria. There observed variation in the morbidity and rate of death due to malaria [1]. All over the world, 300 – 500 million people suffered from malaria. The approximate occasion of malaria every year is 20 million [2, 3]. Three percent of malaria patients are subjected to death [4]. According to an estimate, the incidence of malaria in Pakistan is 43% and still affecting a large number of people [5, 6]. Many haematological issues result from malaria. Thrombocytopenia and anaemia are among these issues [7, 8]. Altered consciousness, vomiting, splenomegaly, cough, congenital malaria, diarrhoea, seizures, acute renal failure, disseminated intravascular coagulation and jaundice with hepatic dysfunction are some other complexities that are associated with malaria [7 – 11]. In patients having malaria, the most commonly found haematological disorder is thrombocytopenia Splenic sequestration, raised IL-10 levels, immune-mediated lysis and dysgenesis are some contributing factors of thrombocytopenia [12]. The current study was conducted in a tertiary care hospital. Districts of Gujrat, Mandibahaudin and Jhelum were also included in our research. All the health services are available there. The aim of this research was to assess the frequency of thrombocytopenia and kinds of parasites found among the patients of malaria.

PATIENTS AND METHODS:

This research study was conducted in the timeframe of September 2017 to October 2018 at Services Hospital, Lahore. The age bracket for this research was from six months to twelve years. These patients were presented from outdoor, indoor and causality reception centres and were also suffering from headache, dizziness, body ache, joint pain, high fever, chills, sweating, rigours and chills. All the patients were checked. From all the patients, four-millilitre venous blood was taken in a particular bottle. To estimate the presence of thrombocytopenia, this ample blood was sent for

Giemsa Staining (thick and thin films) and automated coulter analyzer. These patients were again examined if observed with low platelet numbers. According to the Memon et al. the thrombocytopenia was grouped [13].

Severe Thrombocytopenia: Less than 20,000

Moderate Thrombocytopenia: Less than 50,000 to more than 20,000

Mild Thrombocytopenia: Less than 150,000 to more than 50,000

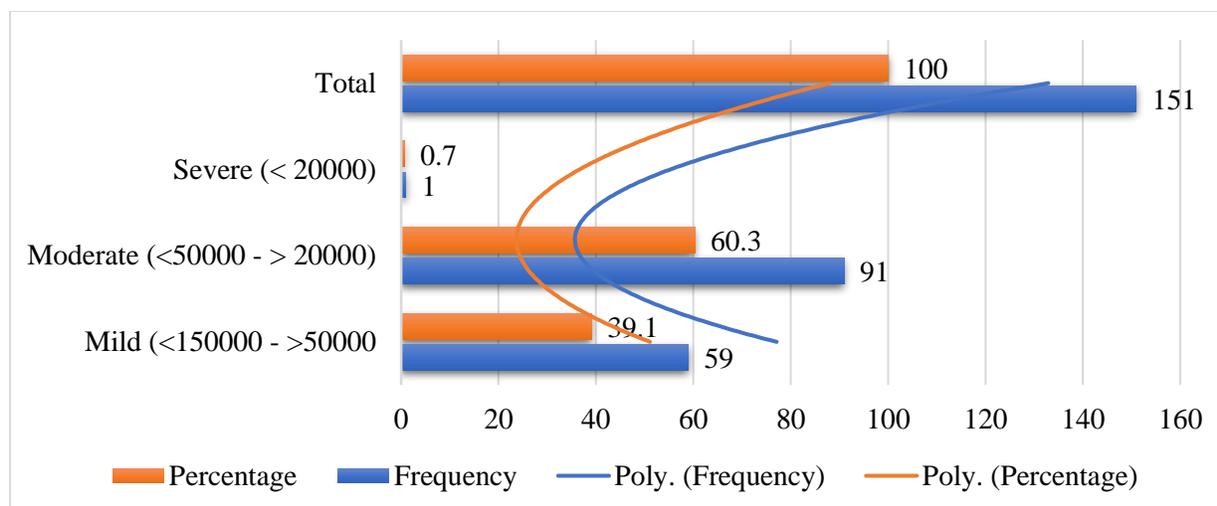
The patients, who were not willing to participate in the research and who were having a history of bleeding disorder, meningitis, pharyngitis, urinary tract infections and drugs (hemolytic agents, guanine) were not selected for this research. For the measurement of the level of thrombocytopenia and type of species, percentages and frequency were calculated. Detailed history and examination record were collected on the questionnaire. SPSS was used for data entry and assessment.

RESULTS:

Total patients enrolled in the research were 273. On Giemsa staining, malaria was not detected in 83 patients (30.4%) and malaria was detected in 190 patients (69.6). The number of males and females were 93 (50.5%) and 94 (49.5%) respectively. From these patients, falciparum strain and Vivax strain were the cause of malaria in 45 (23.7%) and 145 (76.3%) cases; whereas, its occurrence was not reported in 39 (20.5%). Mild-moderate and severe thrombocytopenia were found in 59 (39.1%), 91 (60.3%) and 1 (0.7%) cases respectively. Among patients having thrombopenia, falciparum malaria was observed in 33 (21.8%) and Vivax strain in 118 (78.1%) cases (Table). In the patients suffered from Vivax strain, moderate thrombocytopenia was noticed in 71 (60.16%) and mild thrombocytopenia was noticed in 47 (39.8%) patients. 12 (36.3%) were having mild, 20 (60.6%) were having moderate and 01 (3.03%) were having a severe degree of thrombocytopenia in the cases affected with falciparum.

Table: Severity of Thrombocytopenia

Thrombocytopenia	Frequency	Percentage
Mild (<150000 - >50000)	59	39.1
Moderate (<50000 - > 20000)	91	60.3
Severe (< 20000)	1	0.7
Total	151	100



DISCUSSION:

Diarrhoea, seizures, hepatopathy, cough, fever, abdominal discomfort, jaundice, altered consciousness, acute renal failure and congenital malaria are some factors that mark the identification of malaria [9 – 11]. The frequency of thrombocytopenia is different in different cases. Most of the infections are caused by falciparum and vivax. Malaria is identified if the number of platelets on the peripheral film is not normal [14]. Disseminated intravascular coagulation may mark the presence of thrombocytopenia or it can have hemorrhagic manifestation [15]. Intake of the platelet itself by the malaria parasite, sequestration, defective platelet surface, immune-mediated lysis and diagenesis are different theories that explain the establishment of thrombocytopenia [1, 14]. However, the exact development of thrombocytopenia is not known, according to the study of Casals C, it is observed that a smaller number of platelets is due to the high connection of IL10 [12]. When there is a reduction in the number of platelets, the level of thrombocytopenia is increased. It is needed for the production and multiplication of platelets. When malaria is in serious condition, the level of thrombopoietin is elevated. After the 14 – 21 days of treatment of malaria, its level becomes normal [1, 16]. Thrombocytopenia was noticed in 79.5% of malaria patients in our study. These outcomes are almost similar to the results of studies conducted by Jadhav 97.8%, Shoaib (69.18%) and Uttra (72%) [1, 2, 14]. The prevalence of thrombocytopenia was 53% according to the study by Bashara. Moreover, 58% of the malaria patients had thrombocytopenia according to study organized by Shiraz [17, 18]. For the identification of malaria, detection of thrombocytopenia is an important factor. In children having falciparum malaria, the seriousness of disease can be checked through thrombocytopenia

[19]. It is observed that moderate thrombocytopenia was present in 60.16% cases and mild in 39.8% cases among the cases infection with *Plasmodium vivax*. The results of studies conducted by Aggarwal, Metanat and Makkar are comparable with our results [21, 23]. It has been suggested that immune/non-immune destruction of platelets and evolution of a new strain of vivax are the causes for thrombocytopenia in vivax infected cases. There is the requirement of many studies to point out of specific reason.

CONCLUSION:

It is concluded by the results that in this area of Pakistan, thrombocytopenia is present in high extent with infections of *Plasmodium vivax*. It is also noticed that the cases of vivax malaria are more frequent. Thrombocytopenia is an attribute of malaria and it should be expelled from any febrile illness.

REFERENCES:

1. Patel U, Gandhi G, Friedman S, Niranjana S. Thrombocytopenia in malaria. *J Natl Med Assoc* 2004; 96:121-24.
2. Rodriguez-Morales AJ, Sanchez E, Vargas M, Piccolo C, Colina R, Aria M. Anemia and Thrombocytopenia in children with *Plasmodium vivax* malaria. *J Trop Paediatrics* 2005;10:1093.
3. Mutant M and Mood B. Malaria vivax and severe thrombocytopenia. *Iran J Parasitol* 2010; 5:69-70.
4. Makkar RP, Mukhopadhyay S, Monga A, Gupta AK. *Plasmodium vivax* malaria presenting with severe thrombocytopenia. *Brazilian J Infcc Dis* 2002;6(5):263-265.
5. Aggarwal A, Rath S, Shashi Raj. *Plasmodium vivax* malaria presenting with severe thrombocytopenia. *J Trop Paediatrics* 2005;51 (2): 1201 -2.

6. Roll Back Malaria. WHO Eastern Mediterranean Region. Cairo, Egypt. 2002. p. 114.
7. Shiraz et al. Thrombocytopenia as an indicator of malaria in the adult population. *Malar Res Treat*. 2012; 2012:405981.
8. Manan JA, Ali H, Lai M. Acute renal failure associated with malaria. *J Ayyub Med Coll Abbottabad* 2006; 18:47-52.
9. Abro et al. jaundice with hepatic dysfunction in Plasmodium falciparum malaria. *J Coll Physicians Surg Pak* 2009; 19:363-6.
10. Khalid M et al. Falciparum malaria: various presentations. *Pak J Med Sci* 2006; 22:234-237
11. Rasheed A, Saeed S, Khan SA. Clinical and laboratory findings in acute malaria by various Plasmodium species. *J Pak Med Assoc* 2009; 51:220-3.
12. Casals C, Kai O, Newton CR. Thrombocytopenia in falciparum malaria is associated with high concentrations of IL10. *Am J Trop Hyg* 2006;75:434-6.
13. Memon AR, Afsar S. Thrombocytopenia in hospitalized malaria patients. *Pak J Med Sci* 2006; 22:141-143.
14. Utrera KM, Dcvrajni BR, Shaik K, Shah S. Severity of thrombocytopenia and prolonged bleeding time in patients with malaria. *World Appl Sci J* 2010;9:484-488.
15. Kelton JG, Keystone J, Moore J. Immune-mediated thrombocytopenia of malaria. *J Clin Invest* 1983; 71:832- 836.
16. Krcil A, Wensch C, Brittenham G, Looareesuwan S. Thrombocytopenia in Plasmodium falciparum malaria. *Br J Haematol* 2000; 109:534-6.
17. Khan SJ, Khan FR, Usman M, Zahid S. Malaria can lead to thrombocytopenia. *Rawal Med J* 2008; 33:183-5.
18. Bashwari LA, Mandil AM, Bahnassy AA, Alsluimsi MA, Bukhari HA. F. epidemiological profile of malaria in a university hospital in the eastern region of Saudi Arabia. *Saudi Med J* 2001; 22:133-8.
19. Jadhav UM, Patkar VS, Kadam NN. Thrombocytopenia in Malaria- Correlation with type and severity of malaria. *JAPI* 2004; 52:615-18.
20. Ansari S, Khoharo HK, AbroA, Akhund IA, Qureshi F. Thrombocytopenia in Plasmodium falciparum malaria. *J Ayyub Med Coll Abbottabad* 2009;21 (2): 145- 147.
21. Khan MA, Smego RA Jr, Razi ST, Beg MA. Emerging drug resistance and guidelines for treatment of malaria. *Med Today* 2006; 4:817.
22. Benet S, Woods T, Liyanage WM, Smith DL. A simplified general method for cluster-sample surveys of health in developing countries. *World Health Statistics Quarterly*, 44:98-106.
23. Yasinzai MI, Kakarsulemankhel JK. The incidence of human malaria infection in the desert area of Pakistan. *J Agric and Social Sci* 2008; 4:39-41.