Original Article

Thrombocytopenia in Malaria

A Study of 100 Cases of Thrombocytopenia in Malaria in Swat

Abdul Ahad, Bacha Amin Khan and Abdul Jabbar

ABSTRACT

Objective: Scheme of this study was to observe the contingency of thrombocytopenia in patients with malaria.
Study Design: Prospective Study
Place and Duration of Study: This study was conducted at the Department of Medicine, Saidu Teaching Hospital, Swat from Jan 2015 to Nov 2016.
Materials and Methods: In the Medical unit of Saidu Teaching Hospital, this study was performed on 100 patients having malaria who were positive for malaria parasite.Platelet count was done at the time of presentation by hematology analyzer.
Results: 16 patients were found to have normal platelet count. 68 patients were having platelet count between 50000-150000(mild thrombocytopenia). 11 patients were having platelet count between 20000-50000(moderate thrombocytopenia). 5 patients were having platelet count less than 20000 (severe thrombocytopenia). Male female ratio in this study was almost equal 1.04:1 i.e. 51 males and 49 females. Thrombocytopenia was more common in age group 31-50 years.
Conclusion: Mild to moderate thrombocytopenia is found in malaria. Thrombocytopenia is not diagnostic of malaria but can raise malaria suspicion.

Key Words: Plasmodium, MP, malaria,thrombocytopenia.

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INTRODUCTION

Malaria is a serious, often life-threatening disease which is spread by bite of Anopheles mosquitoes and caused by parasites of the genus Plasmodium.
The incidence of malaria worldwide is about 300 – 500 million cases per year causing deaths in 20 million affected people annually[1]. Annually half a million cases of malaria are reported in Pakistan. The annual mortality rate due to malaria in Pakistan is about 10 percent (Fifty Thousand) of the total affected cases. This result shows that in this country malaria is a major health concern[2].
Various derangements of hematological parameter are found in Malaria and one of the most common associations is mild to moderate thrombocytopenia but there is a rare association with disseminated intravascular coagulation or hemorrhagic manifestations [3].
The association of thrombocytopenia in malaria is not well understood, but some mechanisms have been described such as sequestration of these cells in spleen, immune-mediated lysis, and abnormal formations of platelets have been implicated. As a consequence of malaria, structural and functional abnormalities in platelets have been explained. In rare conditions, malaria parasite by itself can invade the platelets cells[4].
In patients with the finding of thrombocytopenia, it is important to rule out malaria by careful examination of blood smear. Especially in a febrile patient along with thrombocytopenia, workup to exclude malaria is of immense importance. Travelers' returning from tropical areas with acute febrile illness, presence of thrombocytopenia is considered as a sensitive clinical marker for diagnosis of malaria[5]. These findings are based on studies performed to evaluate thrombocytopenia in patients who were smear positive for malaria.

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MATERIALS AND METHODS

From Jan 2015 to Nov 2015, this descriptive study was conducted in Medicine Department of Saidu Teaching Hospital, Saidu Sharif Swat.In this study, a total of 100 patients whom MP was positive were included. Hematology analyzer was used to determine full blood count. Hematologist used Giemsa stain to asses thick and thin smear. Manual method was used for re-evaluation in those patients with decreased platelets count. Three categories were made for patients with thrombocytopenia:

1. Platelet count 50,000 – 150,000 : Mild thrombocytopenia
2. Platelet count 20,000 – 50,000 : Moderate thrombocytopenia
3. Platelet count less than 20,000 : Severe thrombocytopenia
4. Analyzation of data was performed with SPSS.

Inclusion Criteria: All MP positive patients were included.

Exclusion Criteria: Patients having thrombocytopenia secondary to other causes were not included.

RESULTS

100 patients with positive MP were evaluated from Jan 2015 to Nov 2016. Out of these, male patients were 51 (51%), while female patients compromised 49 (49%) of the total. The ratio of male to female was 1.04: 1, indicating almost equal distribution in both sexes. Fig 1 shows gender distribution.

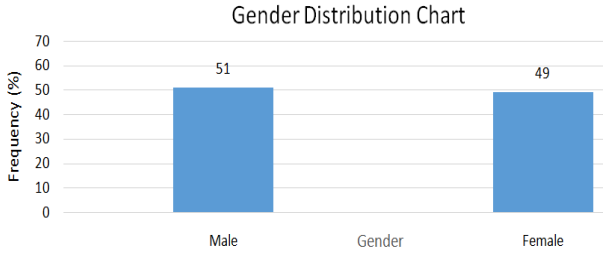

Figure No.1: Ratio of Male to Female: 1.04: 1

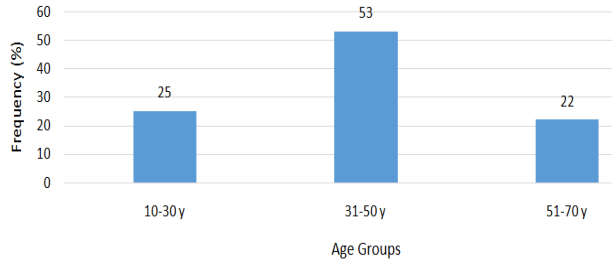

Figure No. 2: Age distribution chart

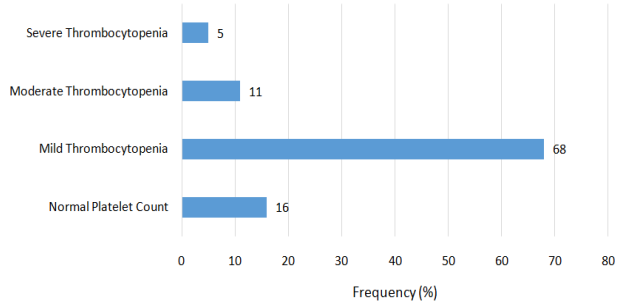

Figure No. 3: Frequency of severity of thrombocytopenia in malaria patients.

Out of these 100 patients, 25 were of age group 10-30 years. 53 belonged to age group 31-50 years, while 22 fell in age group 51-70 years. Fig 2 is showing age distribution.

68 patients had mild thrombocytopenia. 11 patients had moderate while 5 had severe thrombocytopenia. 16 patients had normal platelet count. Fig 3 shows the frequency of severity of thrombocytopenia.

DISCUSSION

In malaria, thrombocytopenia is usually mild to moderate and rarely has any symptoms. Derangement of hematological parameters is common in malaria. Thrombocytopenia is found in 60-80% [6] of cases while anemia in 25% of cases[7].

In a patient with acute febrile illness, presence of thrombocytopenia with anemia is essential guide for malaria [8]. In this study, there is some degree of thrombocytopenia in 84% patients. Looking at this figure, it is higher as compare to studies conducted by others, as 71% by Robinson[9] and 58.97% by Rodrinquez et al [10].

Thrombocytopenia in 53% malaria patients has been reported in Saudi Arabia by Bashwari et al[11]. Thrombocytopenia with anemia in a patient with acute febrile illness is an important diagnostic clue as also reported by Lathia TB et al[12]. In Liberia, Mehmood et al[13] studied 145 MP positive patients. Among these, thrombocytopenia is found in 109 (75.18%) patients. Now this has been agreed upon that thrombocytopenia is very common finding in malaria [14, 15]. Recent studies from India also suggest strong association of thrombocytopenia with malaria[16,17]. Other studies performed in Qatar and Venezuela have also reported thrombocytopenia in malaria [18, 19]. Studies from Brazil have also found similar results [20].

CONCLUSION

In malaria, high frequency of mild to moderate thrombocytopenia has been reported. The combination of thrombocytopenia and anemia in patients with acute febrile illness raises possibility of malaria infection**.**

Author's Contribution:

Concept & Design of Study:	Abdul Ahad
Drafting:	Abdul Jabbar
Data Analysis:	Bacha Amin Khan
Revisiting Critically:	Bacha Amin Khan
Final Approval of version:	Abdul Ahad

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Khan Ma, Smego RA, Razi ST, Beg MA. Emerging drug resistance and guideline for treatment of malaria. Med Today 2006;4:81-7.
2. Roll Back Malaria. WHO Eastern Mediterranean Region Cairo. Egypt 2002;1-14.
3. Ladhani S, Lowe B, Cole AO, Kowuondo K, Newton CR. Changes in white blood cells and

platelets in children with falciparum malaria - Relationship to disease outcome. Br J Haematol 2002;119: 839-847.
4. Jadhav UM, Patkar VS, Kadam NN. Thrombocytopenia in malaria – correlation with type and severity of malaria. J Assoc Physicians Ind 2004; 53: 615-8.
5. VD'Acremont, P Landry, Mueller, A. Pecoud and B. Genton. Clinical and laboratory predictors of imported malaria in an outpatient setting and aid to medical decision making in returning travelers with fever. Am J Trop Med Hygiene 2002;66(5): 481-486.
6. Kreil A, Wenisch C, Brittenham G. Thrombocytopenia in P Falciparum malaria. Br J Hematol 2000; 109: 534-6.
7. Kathryn NS, Kevin C, Jay SK. Malaria, CMAJ 2004;170: 1503-18.
8. Patel U, Gandhi G, Freidman S, Niranjan S. Thrombocytopenia in malaria. J Natl Med Assoc 2004;96:1212-4.
9. Robinson P, Jenney AW, Tachado M, Yung A, Manitta J, Taylor K, et al. Imported malaria treated in Melbourne, Australia: Epidemiology and clinical features in 246 patients. J Travel Med 2001;8: 76-81.
10. Rodriguez – Morales AJ, Sanchez E, Vargas M, Piccolo C, Colina R, Arria M. Anemia and Thrombocytopenia in children with plasmodium vivax malaria. J Trop Pediatr 2005;10:1093.
11. Bashwari LA, Mandil AM, Bahnassy AA, Alshamsi MA, Bukhari HA. Epidemiological profile of malaria in a university hospital in the eastern region of Saudi Arabia. Saudi Med J 2001; 22:133-8.
12. Lathia TB, Joshi R. Can hematological parameter discriminate malaria from non-malarious acute febrile illness in the tropics. Ind J Med Sci 2004; 58:239-44.
13. Mahmood A, Yasir M. Thrombocytopenia: A predictor of malaria among febrile patients in Liberia. Infect Dis J 2005;14:41-4.
14. Akhtar MN, Jamil S, Amjad SI, Butt AR, Farooq M. Association of malaria with thrombocytopenia, Annals of King Edward Med Coll 2005;II:536-537.
15. Rehman ZU, Alam M, Mahmood A, Mubarik A, Sattar A, Karamat KA. Thrombocytopenia in acute malarial infection. Pak J Pathol 1999;10:9-11.
16. Srivastava S, Ahmad S, Shirazi N, Verma SK, Puri P. Retrospective analysis of vivax malaria patients to tertiary referral center of Uttarakhand. Acta Tropica 2011;117(2):82-85.
17. George P, Alexander LM. A study on the clinical profile of complicated plasmodium vivax mono-infections. Asian Pacific J Tropical Med 2010;3(7): 560-562.
18. Khan EY, Lutof AK, Yassin MA, et al. Imported malaria in Qatar: a One year hospital-based study in 2005. Travel Med Infect Dis 2009;7(2):111-117.
19. Gonzalez B, Rodulfo H, De Donato M, Berrizbeitia M, Gomez C, Gonzalez L. Hematologic variations in patient with malaria caused by Plasmodium vivax before, during and after treatment. Investigacionclinica 2009;50(2):187-201.
20. Silva SBR. Avaliacaoda frequencia e dos fatoresassociados a plaquetopeniacausadapelo plasmodium vivax[MSc Thesis], Universidade Federal do Mato Grosso, Mato Grosso, Brazil, 2009.