|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
PubMed (National Library of Medicine ID: 101738825)
Index Copernicus Value 2018: 75.71
Original Research Article
Volume 4, Issue 4; April: 2020; Page No. 72-74

STUDY OF COMPLICATIONS OF MALARIA IN ADULTS PATIENTS: A PROSPECTIVE STUDY FROM BHOPAL

Dr. Nikhil Gupta[1], Dr. RS Maniram[2], Dr. Garima Vijayvergiya[3]
[1]Senior Residence, Department of Cardiology, Gandhi Medical College, Sultania Rd, Near Hamidia Hospital, Royal Market, Bhopal, Madhya Pradesh, India
[2]Associate Professor, Department of Medicine, Gandhi Medical College, Bhopal, MP, India
[3]3rd Year, Senior Resident Pathology All India Institute of Medical Sciences, Bhopal

Article Info: Received 18 March 2020; Accepted 23 April 2020
DOI: https://doi.org/10.32553/ijmbs.v4i4.1090
Corresponding author: Dr. Garima Vijayvergiya
Conflict of interest: No conflict of interest.

Abstracts
Background: Malaria is a major health problem all over the globe. WHO recorded that 228 million people suffered and 405000 died due to malaria in 2018. Severity of malaria is known to be the cause of serious morbidity and mortality in poor population. Understanding of its current symptoms and associated complication can help in early diagnosis.
Aims and objectives: To study the malarial complications among the adult patients.
Materials and Methods: Hundred malaria patients were studied at Gandhi Medical College and associated with Hamidia Hospital from Jan 2019 to Dec 2019. For all the subjects' medical history, demographic details and medical complications were recorded.
Results: Major symptoms at the time of admission were fever, nausea and headache. Major complications in SM patients were severe anemia, prostration, hyperpyrexia (9%) respiratory distress in (6%), thrombocytopenia (70%), low leukocyte count (21%), and cerebral malaria was recorded in 4%. No mortality was recorded during this study.
Conclusion: Severe anemia, prostration, hyperpyrexia, ARDS, thrombocytopenia and low leukocyte count are the major complications of SM.
Keywords: nausea, anemia, prostration, hyperpyrexia, thrombocytopenia

Introduction

All over the world malaria is a common infection due to the Plasmodium falciparum and Plasmodium vivax protozoan parasites. It is a disease of global importance and World Health Organization (WHO) has recorded 247 million annual incidences worldwide with nearly one million deaths per year. [1]

The major complications are caused by P. falciparum and P. vivax, with P. falciparum being the more virulent. These pathologies of are severe anemia, cerebral malaria, and acute respiratory distress. [2]

Severe malaria (SM) is defined by the detection of P. falciparum with at least one severe complication like the impaired consciousness, multiple convulsions, prostration, respiratory distress, shock, severe anemia, jaundice etc. [3]

Various health agencies have recorded that the mortality due to malaria complications is rising but there are not many studies which have assessed complication and their severity. Current study is an attempt to study and understand various complications of malaria.

Materials and Methods:

Present study was carried out for one year at Gandhi Medical College and associated Hamidia Hospital starting from Jan 2019. All the subjects were enrolled post the approval from the ethics committee and written consent from the patients.

Adults patients in working age of 18 to 50 years admitted with severe malarial fever were included in the study. All the patients were tested with malarial antigen test to confirm the malarial infection. Patients on medication, diabetic, have cardiovascular disease, kidney disease or recently being operated was excluded from this study.

For the purpose of this study, medical history and demographic profile of subjects were recorded. During this observation study subjects were treated with antimalarial therapy as recommended by WHO.

Observational data was recorded in MS excel and statistically analyzed with the help of IBM SPSS software. Quantitative data were expressed as mean and standard deviation whereas categorical data was expressed as percentage. Frequency distribution was used to obtain the percentage and number. No further statistical analysis was performed.

Result

In present study male preponderance was reported (60%) as compared to 40% females. Mean age of study cohort

was 39.9 years. Mean age of male and female subjects were 38.5 and 32 years respectively.

Most of admissions were in the monsoon period i.e. July to Oct due to the mosquito spread of malaria. Major symptoms recorded at the time of admission were fever in all patients, followed by nausea and headache in 38% and 32% subjects. Majority of patients were admitted due to the jaundice and abdomen pain which were prevalent in 17% and 14% subjects.

Out of 100 subjects, 25% had severe malaria. Major complications in SM patients were severe anemia which was in seen in 4 (16%) subject, severe weakness and prostration was seen in 5 (22%) subjects. Hyperpyrexia (<107 degree F) in 2 (9%) and the acute respiratory distress syndrome was reported in 2 (8%) subjects.

Other Major complications were thrombocytopenia i.e. platelet count <1,00,000/cmm in 17 (70%) subjects, low leukocyte count (<4000/cmm) in 5 (21%) and cerebral malaria in 4% patients experienced the severe malaria. None of the subjects had or died during this study.

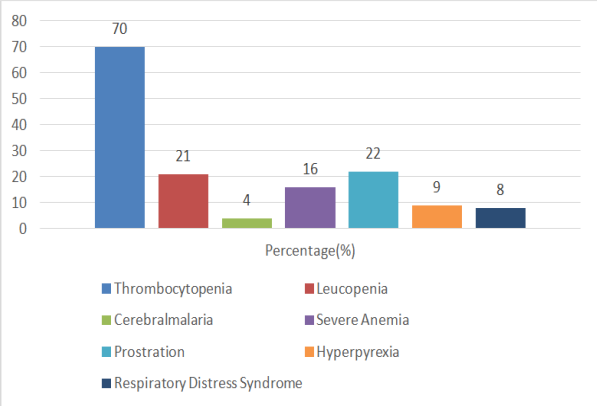

Figure 1: Distribution of complications in severe malaria(SM)

Discussion:

Various government and individual studies suggest that in India mortality due malarial complications in southern states is 7.9%, while central and east India is 25.6% and 30% respectively. In central India 8.5% patients had cerebral malaria of them mortality rate is 25.6%. Mortality and morbidities are significantly higher in diabetic patients. Delayed diagnosis and management of complications are the major cause of deaths. [4]

Present study observed that malaria is more prevalent among males (60%) than females (40%), similar observations were made by Muddaiah et al where malaria was prevalent among 81% males and 19% females. [5] Another study by Sahoo et al reported that males (59%) and 39 females (41%) ratio as 1.4:1 among patients of malaria. [6] Severe malarial anemia is adults is defined by an Hb concentration of <7 g/dl or a hematocrit of <20% together with a parasite count >10,000/µl. [7]

Present study observed that out of 25 severe malarial patients 16% had severe anemia, similar study by Alexandre et al. found that 29.4% patients of malaria had severe anemia.[8] another study of malarial complication by Vitor-Silva et al reported 25.9% cases of anemia. [9] The minor difference between our observation and these studies could be due to the varying population composition, as our study had 40% females which are known to be more anemic than males.

Present study recorded severe weakness or prostration in 30 (22%) subjects. Similar Ethiopian study by Ketema et al reported prostration (inability to sit unassisted) in 41.67% and 13.81 % subjects in two different study cohorts. [10] Sawsan et al in similar study reported the prostration and weakness seen in 20.6% malaria patients. [11]

Hyperpyrexia or very high fever (<107 degree F) was recorded in 9% malarial patients. Similarly a Sudanese study reported hyperpyrexia in 9% patients of malarial infection. [11] Demissie et al in observational study recorded hyperpyrexia in 14.5 % cases of malaria. [12]

Present study reported a respiratory rate greater than 40 breaths per minute i.e. acute respiratory distress syndrome in 8% subjects. Similar observations were made by another Indian study by Saya et al who also reported respiratory distress in 6% patients of malarial infection. [13] Similarly Borah et al reports respiratory problems in 1.13% subjects only. [14] This difference could be due to varied geographical and demographic profile of subjects.

Present study recorded incidences of thrombocytopenia in 70% patients of severe malaria. Similar study by Muley et al reported that 63% had platelet count <100000/mm3 i.e. thrombocytopenia. [15] Coelho HCC, et al in similar study reported thrombocytopenia in 62.9% patients. [16]

We observed low leukocyte (white blood cell) count 21% patients of SM. Similar observations were made by Tobón-Castaño et al in Columbian study where 18% malarial patients had leucopenia. [17]

Cerebral malaria is one of the most serious complication which can be potential cause of coma and death. In present study cerebral malaria was seen in 4% subjects, similar observation were made by Tjitra et al who found cerebral malaria as major complication of in malarial patients. [18] Similar studies by Mishra et al [19] and Beg MA et al [20] highlighted the cerebral malaria as major complication of SM in 5% to 8% patients.

Zero deaths were recorded during his study which could be due to urban study setup where health care is in good shape and all the complications were treated before fatal outcomes.

Conclusion:

Present study conclude that malarial complications are diverse and varied from mild symptoms to death causing complications and therefore prompt diagnosis and symptomatic management is crucial to prevent morbidity and mortality in patients of severe malaria.

Reference:

1. WHO. World Malaria Report. World Health Organization, Geneva, Switzerland, 2008: 9–15,
2. Haldar K, Murphy SC, Milner DA Jr., Taylor TE. Malaria: mechanisms of erythrocytic infection and pathological correlates of severe disease. Annual Review of Pathology: Mechanisms of Disease 2007; 2 : 217–49.
3. Sypniewska P, Duda JF, Locatelli I, Althaus CR, Althaus F, Genton B. Clinical and laboratory predictors of death in African children with features of severe malaria: a systematic review and meta-analysis. BMC Med 2017;15:147.
4. Bhardwaj N, Ahmed MZ, Sharma S, Srivastava B, Pande V, Anvikar AR. Clinicopathological study of potential biomarkers of Plasmodium falciparum malaria severity and complications. Infect Genet Evol 2019; 18:104046.
5. Muddaiah M, Prakash PS. Muddaiah & Prakash. Clinical profile of malaria in south canara. j vect borne dis 43, march 2006.
6. Sahoo AK, Das KK. Pulmonary Complications in Falciparum Malaria in a tertiary care center in costal Andhra Pradesh. IOSR Journal of Dental and Medical Sciences 2013; 4 (3): 82-5.
7. Lartey A. Maternal and child nutrition in sub-Saharan Africa: Challenges and interventions. The Proceedings of the Nutrition Society 2008;67(1):105-8.
8. Alexandre MA, Ferreira CO, Siqueira AM, Magalhaes BL, Mourao MP, Lacerda MV et al. Severe Plasmodium vivax malaria, Brazilian Amazon. Emerg Infect Dis. 2010;16:1611-4.
9. Vitor-Silva S, Reyes-Lecca RC, Pinheiro TR, Lacerda MV. Malaria is associated with poor school performance in an endemic area of the Brazilian Amazon. Malar J. 2009;8:230.
10. Ketema T, Bacha K, Alemayehu E, Ambelu A. Incidence of Severe Malaria Syndromes and Status of Immune Responses among Khat Chewer Malaria Patients in Ethiopia. PLoS ONE 2015; 10(7): e0131212.
11. Sawsan AO, Malik MI, Zahran FE, Sharaf SM. Trend, Manifestations and Outcome of Falciparum Malaria Infection in Wad-Medani Teaching Hospital in the Central Region of Sudan, International Journal of Prevention and Treatment 2019; 8 (3): 53-8.
12. Demissie, Y., Ketema, T. Complicated malaria symptoms associated with Plasmodium vivax among patients visiting health facilities in Mendi town, Northwest Ethiopia. BMC Infect Dis 2016; 16: 436.
13. Saya RP, Saya GK, Debabrata G3. Trend and manifestations of falciparum malaria in a tertiary care hospital of India. Adv Biomed Res 2016; 5:128.
14. Borah V, Das M, Ali A. Clinical Profile of Malaria in Children in a Tertiary Care Centre. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS). 2019; 18 (6 Ser. 5):1-4.
15. Muley A, Lakhani J, Bhirud S, Patel A.Thrombocytopenia in Plasmodium vivax Malaria:How Significant?Journal of Tropical Medicine 2014; 2014; Article ID 567469:1-4.
16. Coelho HCC, Lopes SCP, Pimentel JPD, Nogueira PA, Costa FTM, Siqueira AM, et al. Thrombocytopenia in Plasmodium vivax Malaria Is Related to Platelets Phagocytosis. PLoS ONE 2013; 8(5): e63410.
17. Tobón-Castaño A, Mesa-Echeverry E, Miranda-Arboleda AF. Leukogram Profile and Clinical Status in vivax and falciparum Malaria Patients from Colombia.Hindawi Publishing Corporation. Journal of Tropical Medicine 2015; 2015; Article ID 796182:1-11.
18. Tjitra E, Anstey NM, Sugiarto P. Multidrug resistant plasmodium vivax associated with severe and fatal malaria: A prospective study in Papua, Indonesia. PLoS Med 2008;5:e128.
19. Mishra VN, Singh D. Cerebral malaria caused by Plasmodium vivax. J Assoc Physicians India 1989;37:411.
20. Beg MA, Khan R, Baig SM et al. Cerebral involvement in benign tertian malaria. Am J Trop Med Hyg 2002;67:230-2.