FREQUENCY OF LEUKOPENIA IN SLIDE POSITIVE VIVAX MALARIA PATIENTS PRESENTING WITH FEBRILE ILLNESS

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ABSTRACT

Background: Anemia and Thrombocytopenia being the most common abnormalities has been reported very frequently. There is noactual depletion of leukocytes and once malaria gets cured thewhite blood cell counts improve considerable in the comingdays to weeks. Leukocytosis has been reported only in thosecases where there is concurrent bacterial infection and carriesa bad prognosis. Leukopenia however has not been reported very frequently though it is an accompaniment of the disease.

Objective: To detect the frequency of leukopenia in slide positive VivaxMalaria patients presenting with febrile illness.

Methodology: this cross sectional study was conducted in the GeneralMedicine Department, Ayub Teaching Hospital, Abbottabad, From Jun 27, 2014 To Dec 26, 2014

Results:In this study, out of 165 patients, males were 59.39% and females were 40.61%. The male to female ratio was1.46:1. Average age of the patients was35.84years+14.04SD. The frequency of leukopenia amongVivax Malaria patients presenting with febrile illness was observed in 65(39.39%)

Conclusion:leukopenia is a common problem in clinical andhematological practice. The incidence is high in Vivax malariapatients. Therefore prompt action is required when patientspresenting with Vivax malaria so that one can be treated toreduce morbidity and prolong survival.

Key Words: Anemia, Acute Leukemia, Aplastic Anemia, Malaria.

INTRODUCTION

Various blood cells variations have been seen inmalaria patients. Low Hb and decreased level of leucocytes being the most widely recognized anomalies has been accounted for very frequently[1]. Thrombocytopenia has been accounted for so much of the time that its nearness in febrile people has been marked as a prescient factor ofmalaria infection in a few important examinations. White Blood Cells (WBC) checks might be low to normal range in patients with malaria. This trends has been portrayed in old studies[2]as well as new studies[3-5]. The explanation for this wonder is the relocation and limitation of white platelets transfer fromblood to spleen and different organs of reticular enacting framework where this type of fever is relevantly managed with[5]. There is no genuine consumption related to leukocytes and once fever gets relieved the white cells improve impressive in the coming days to weeks. Leukocytosis has been accounted for just in those situations where there is simultaneous bacterial infections and did not conveys a good prognosis. Leukopenia anyway has not been accounted for in all respects regularly however it is a backup of the sickness. Malariais a disease transmitted by mosquito. The causative organism being the plasmodium which aprotozoans (a sort of unicellular microorganism) of the family Plasmodium. Ordinarily, the ailment is transmitted by a female Anopheles mosquito, which injectorganism from its saliva into anhuman blood.

After injection in the circulatory system, the parasites are carried to the liver where these develop and reproduce. This cause symptoms that ordinarily denoted by chilling fever and migraine, which in extremity can advance to comma or death[6].

Malaria is a hematological disease with different species of plasmodium infection and a diverse symptoms and presentation. However, the species Falciparum malaria typically also infect the neurological system with make it very different as compared to other plasmodium. Two malarial plasmodium which are vivax and falciparum being the commonest in this subcontinent have been the highlly contemplated. Falciparum infection is, anyway, consideredthe most feared one and the most concentrated as well.Plasmodium vivax is the most common prevalent malaria infection and is an important cause of morbidity in endemic areas of Asia, Oceania, central and south america[7]. Recently analysts have closed in different examinations the vivax infection ought not be likened with kindhearted infection as it can have grave outcomes andan ongoing overflow of significant research managing vivax infection and its different inconveniences.

The malaria prompted changes in the white cell like neutropenia, neutrophilia, immature neutrophils (left shift), neutrophil granulation, lymphopenia, lymphocy-

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tosis, atypical lymphocytes, monocytosis, eosinopenia, post treatment eosinophilia, and Leukemoid reactions[8]. As of now sure of these qualities have been given prescient incentive to deal with malaria if specific clinical component like decreased thrombocytes is available in individuals with fever[9].

Malaria has assorted with puzzling hematological signs and a research is by and by taking a part for different parameter of blood and its progenitors. Well understoodphenomenon is thrombocytopenia and leukocytosis with limited number of papers looking into this matter.

Individuals have devised predictive capabilities of whole blood counts in patient with fever to look at the presence of malarial infection. Thrombocytopenia is one such prediction. So, in this study we are looking at the frequency of leukopenia on which literature is scares, yet not sufficient to guide us to look into this perspective. Accepting huge burden this disease in our population an observational study can be helpful to help devise future guidelines for more diverse and randomized clinical trials which would enable the researchers to device strategies to predict the presence of a common disease from the accompanied hematological abnormality.

METHODOLOGY

This cross sectional study was conducted from Jun 27, 2014 to December 26, 2014. The main objective of our study was to determine the frequency of leukopenia in slide positive vivaxmalaria patients presenting to Hayatabad Medical Complex, Peshawar.Vivaxmalaria was considered in patient who present with typical symptoms of fever, headacheand positive thin smear for plasmodium vivax. Leucopenia was considered in patients whom the total white cell countdrops below 3,500 per cubic millimeter in the blood. A total of 165 patients with slide positive vivax malaria patients presenting with febrile illness were included in the study. Sampling technique was non probability consecutive sampling. Patients with aged 16 years or above, having slide positive vivax malaria presenting with acute febrile illness were included in the study. Patient with established blood dyscrasias whether primary or secondary were excluded from the study.

Statistical analysis

All data collected were entered and analyzed using SPSSversion 23. Frequencies were calculated for the qualitativevariables like gender, age, and leukopenia. Mean and standard deviation were calculated for quantitative variableslike age of the patient. Degree of leukopenia was stratifiedamong age, gender to see the effect modifiers.

RESULTS

There were 98(59.39%) were males and 67(40.61%) were females. Male to female ratio was 1.46:1.Average age of the patients was 35.84years+14.04sdwith range 18-60 years. Patient's age was divided in four categories, out of which most common age group for vivaxmalaria was less than or equal to 25years in our study. Therewere 56(33.9%) patients were of the age less than or equalto 25 years. Forty seven (28.5%) patients were in the agerange of 26-40 years, 33 (17.6%) were of age range 40-55years and 29(1.6%) presented at age more than 55 years of age. The leukopenia in slide positive vivax malaria patientspresenting with febrile illness was observed in 65(39.39%)while in 100(60.61%) patients show no leukopenia. Table 1showed gender wise distribution of leukopenia shows that gender has no role over both although preponderance in female as that of male. There were 35.7% leukopenia in male and 44.8% shows in female patients.Age wise distribution of leukopenia shows that leukopenia in old age was high as that of younger age. Thepatients having age less than or equal to 25 years of age have leukopenia of 26.5%, age group 26-40 years contain 13.5%leukopenia, 41-55 years age groups gave 15.8% leukopenia and patients having more than 55 years of age have 23.8% leukopenia in slide positive vivax malaria patients presenting with febrile illness.

DISCUSSION

The occurrence of leucopenia in this research was similar to that published earlier[10, 11].There may be a

Table 1: leukopenia presence and its relation with age and gender

		Leukopenia		Total	p-value
		Yes	No		
	Total	65 39.4%	100 60.6%	165 100.0%	
Gender	Male	35 35.7%	63 64.3%	98 100.0%	
	Female	30 44.8%	37 55.2%	67 100.0%	
Age in years	≤25.00	20 35.7%	36 64.3%	56 100.0%	
	26.00-40.00	16 34.0%	31 66.0%	47 100.0%	
	41.00-55.00	12 36.4%	21 63.6%	33 100.0%	
	≥56.00	17 58.6%	12 41.4%	29 100.0%	

transient finding like thrombocytopenia and normalizes after antimalarial therapy[12].

Infectiondue to plasmodium vivax is less severe than falciparum, andparasite levels in blood are lower. Parasitized RBCs donot develop knobs, therefore any micro-vascular obstructionwith resultant brain, kidney, lung, or other organ complications rarely occur[13]. Men were more suffered than women in our study.

Males predominance were also evident in other studiesconducted locally and abroad like Karachi[14], quetta[15], Papuanew guinea[16]and Saudi Arabia[17].There was no sex restrictioninj our study, so we hadboth gender patients who presented withVivax malaria. In our study male were more than female {98(59.39%) versus 67(40.61%)}. Male to female ratio was 1.46:1. Malepredominance is also observed in other studies conductedlocally in Peshawar[3, 4]Jamshoro[11], abbottabad[1]studiesconducted abroad Nepal[9], India[12]and Yemen[18].

A total of 43% of our subjects showed changes in WBCcount with most 65(39.39%) were leukopenic while only 4%showed leukocytosis which is consistent to the reportedby otherauthors including those from Kenya (5.9%)[19]sites of sub- SaharanAfrica(5%)[20]and peru[21],leukocytosis was rarelynoticed in those areas[22]. Another report on kenyan children ofMalaria showed more white cell levelas compared tocommunity controls[23].the heterogeneity described foranemia could be witnessed for WBC count as well with someCenters reporting the rates of leukocytosis as high as 15%[24]and 20%[25]. Frequency of leukopenia in our subjects weremuch higher than the frequency of 9–10%[25] reported from

Other institutes including Thailand where one-sixth (16%) of the*p. Falciparum* sufferedindividuals had WBC counts of <4000cells/µl[21].In a study conducted in Mumbai, India leukopenia wasobserved in 14% and leukocytosis in 4.9% cases[26]. This study nearly coincides with our study.

CONCLUSION

The study concluded that patients of vivax malaria should be monitored for occurrence of leukopenia as their earlydetection and treatment or referral to higher center can be lifesaving. In our hospital based study the incidence of leukopenia may be higher than incidence in community and isa limitation of the study. Severe vivax malaria is a relativelynew clinical entity and further studies from different parts of Pakistan are needed.

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