

P.Vivax Infection In A Known Case Of Sickle Cell Anaemia (SCA) – Changing Trends?

Dr. Sunanda Joshi*, Dr. Grishma R. Trivedi**, Ms. Radhika Rana**,
Dr. Sucheta J Lakhani***, Dr. Vidya S Date***

*3rd Year Resident, **Assistant Professor, ***Professor, Department of Microbiology,
SBKS Medical Institute & Research Center, Piparia, Waghodia, Dist: Vadodara, Gujarat, India

Abstracts: We report a case of P.vivax infection in a case of sickle cell anaemia. The patient was a known case of sickle cell anaemia and was admitted with chief complaints of Fever with chills and rigors since 4 to 5 days and investigations were sent in microbiology laboratory for detection of malarial antigen and he was found to be positive for P.vivax by both rapid test and Giemsa staining. It is thought that malaria is rare in patients of sickle cell anaemia as infected RBCs sickle and malarial parasites cannot survive in those RBCs. [Joshi S et al NJIRM 2012; 3(4) : 146-147]

Key Words: P.vivax infection, Sickle cell anaemia.

Author for correspondence: : Dr. Grishma Trivedi, 75-A, Avdhootnagar Society-1, B/H Polytechnic College, Bholav, Bharuch – 392002, Gujarat. E- mail: drgrtrivedi@gmail.com

Introduction: Malaria is endemic in many developing countries of the world including India.¹ It is responsible for high morbidity and mortality in these countries. Annually, 3,00,000 children are born with Sickle Cell Anaemia (trait/disease).² In India, studies have reported its high frequencies in Gujarat, Madhya Pradesh, Maharashtra, tribal areas of Rajasthan and parts of Southern India.³ There is compelling evidence to suggest that patients with SCA are protected from malaria, both in terms of a lower prevalence of malaria infection and a lower parasite density.⁴⁻⁸ The protective mechanism in this genetically mediated condition is the infected RBCs sickle, become rigid and are removed by spleen before the parasites can develop into schizonts.¹ Here, we report a case of P.vivax infection in a known case of SCA.

Objective: Detection of MP in known case of SCA with careful peripheral smear examination.

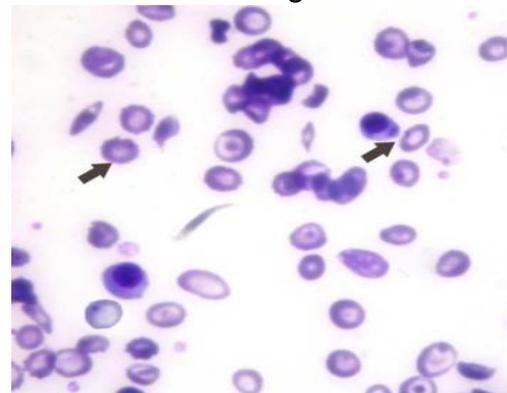
Case Report: A case of 30 year old male patient, known case of sickle cell anemia came with chief complaints of fever with chills and rigors since 4 to 5 days with abdominal pain, headache and generalized weakness.

On examination: Mild splenomegaly, pallor, icterus; Pulse: 68/min regular, BP:110/70 mmHg, Hb-4.2 gm%, Total Leucocyte Count - 7000/cmm, Differential Count (Neutrophils/ Lymphocytes/ Basophils/ Eosinophils) -75/20/2/2, Platelet Counts - 1,17000 lacs. Renal and liver function tests were

within normal limits. Patient was investigated for malaria elsewhere but it was reported negative.

Blood sample (EDTA) was received for detection of malarial parasite antigen. The test was performed using Accucare (Lab-Care Diagnostics Pvt Ltd) which detects pLDH and pfHRP-2 for P.vivax and P.falciparum respectively. Thick and thin smears stained with Giemsa Stain were examined for malaria parasite. Malarial antigen detection test was found to be positive for P.vivax. Various morphological forms like late trophozoites, schizonts and ring forms of P.vivax were seen on peripheral smear with high parasitaemia.¹

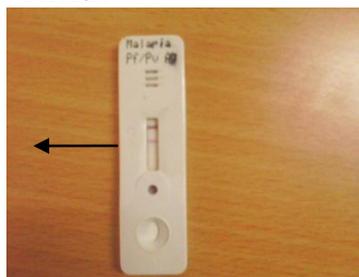
Fig. 1 Peripheral Smear (Giemsa Stain, seen through Nikon two headed microscope) showings sickled cells with P.vivax rings.



Based on the report, the patient was treated with Chloroquine, but patient did not respond. So patient was treated with injectable artemisin derivative. Clinically patient recovered in 20 days.

After 3 weeks, sample was repeated and was negative by both malarial antigen as well as Giemsa staining. All blood indices were within normal limit. Patient was discharged then after.

Fig. 2 Showing Accucare Malaria Antigen Test, positive for P.vivax



Discussion: The first detailed report on role of malaria as a cause of morbidity and mortality in patients with Sickle Cell Anaemia was published in January 2010.⁹ In this report, it was observed that there was lower prevalence of malarial parasitaemia in patients with Sickle Cell anaemia than in patients without SCA. Later we noticed similar cases from the same institute. Diagnosis of these cases was not done at Microbiology Department. These were earlier reported in a case-report by Muley et al.³ They emphasized that malaria in Sickle Cell anemia is not so rare in current scenario as thought earlier. Severe complications and heavy parasitaemia is found in the patient with SCA contrary to the current thought that sickle gene protect against heavy parasitaemia. Also, patients have more complications and take longer than usual time to recover. Therefore the consequences of malaria in SCA appear to be severe during acute illness, as previously suggested by Molineaux et al.¹⁰ This findings highlight the requirement of further detailed studies on consequences of malaria in SCA and importance of prompt and effective diagnosis and treatment.

Conclusion: A careful examination of peripheral smear and malarial antigen test can lead to early detection of malarial parasite in these patients and with timely treatment preventing further complications of malaria in SCA.

References:

1. Karyakarte R. Phylum:Apicomplexa; Plasmodium. In:Text book of Medical Parasitology.2nd ed. Kolkata.Books and Allied pvt ltd 2008:61-88
2. Christianson AL,Howson CP, Model B. March of Dimes Global Report on Birth Defects:Hidden Toll Of Dying And Disabled Children, White Planes NY: March of Dimes Birth Defects Foundation ;2006
3. Mulay AP et al.Sickle cell hemoglobinopathy against malaria: is it changing? Int J Biol Med Res:2011;2 (3):818-819
4. Okuonghae HO, Nwankwo MU, Offor E. Malarial parasitaemia in febrile children with sickle cell anaemia. J Trop Pediatr.1992;38(2):83-85.
5. Aluoch JR. Higher resistance to Plasmodium falciparum infection in patients with homozygous sickle cell disease in western Kenya. Trop Med Int Health.1997;2(6):568-571
6. Kotlia R, Okesola A, Makanjuola O. Asymptomatic malaria parasitaemia in sickle cell disease patients:how effective is chemoprophylaxis? J Vector Borne Dis.2007; 44(1):52-55.
7. Awotua-Efebo O, Alikor EA, Nkanginieme KE. Malaria parasite density and splenic status by ultrasonography in stable sickle cell anaemia (HbSS) children. Niger J Med.2004;13(1);40-43
8. Komba AN, Makani J, Sadarangani et al. Malaria as a cause of morbidity and mortality in children with homozygous sickle cell disease on a coast of Kenya. Clin. Infect dis. 2009; 49(2):216-222.
9. Julie Makani, Albert N. Komba, Sharon E. Cox. Blood, 14, vol. 115, No. 2, pp. 215-220
10. Molineaux L, Fleming AF, Cornille-Brogger R, Kagan I, Storey J. Abnormal Haemoglobin in Dudan savanna of Nigeria, III: malaria, immunoglobulins and antimalarial antibodies in sickle cell disease. Ann Trop Med Parasitol. 1979; 73(4):301-310.