Case Report

Access this article online



Website: www.ijhonline.org DOI: 10.4103/ijh.ijh_8_20

Imported vivax malaria: A case report and a literature review

Basma Dawood Hanoon

Abstract:

Imported malaria is defined as an infection acquired in a malaria-endemic area but diagnosed in a nonendemic country after the development of clinical symptoms. The fatality rate of malaria in the nonendemic area was 60 times higher than that in endemic areas, mainly because of the late diagnosis and treatment. Here, we report a 23-year-old Bangladesh male worker in a cleaning company was admitted to the AI Nuaman Teaching Hospital on May 22, 2018, with high-grade fever and abdominal pain of 2 days duration. In medical history, he had been diagnosed with malaria since childhood. The case report is presented with a review of the literature. Microscopy remains the gold standard diagnostic tool of malaria, thick and thin smears \pm rapid diagnostic tests should be performed on all febrile returned travelers from risk areas.

Keywords:

Imported, malaria, report

Introduction

alaria continues to be a major problem of global health.^[1] Despite various strategies taken by the government and World Health Organization (WHO), malaria still a major cause of death in many countries, including Bangladesh.^[2] Despite the difficult situation in Iraq, great progress has been made in the field of malaria, the past two indigenous malaria cases in Iraq were reported in 2008. Currently, Iraq is developing a national strategy of malaria for 2016–2020.^[3] Imported malaria defined as an infection acquired in a malaria-endemic area but diagnosed in nonendemic countries after the development of clinical signs and symptoms.^[4]

The movement of malaria parasites by human migration or population movement from one country to another may cause disease spread to nonendemic areas or areas, where malaria was previously eliminated^[5,6]

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

with anopheles vectors still present in many nonendemic countries,^[7] so imported cases can cause secondary transmission.^[8]

The fatality rate of malaria in the nonendemic area was 60 times higher than that in endemic areas, mainly because of the late diagnosis and treatment of patients, as health professionals in nonendemic areas lack the expertise and orientation to handle such cases.^[9,10]

It is a mosquito-borne disease caused by *Plasmodium vivax*, *Plasmodium falciparum*, *Plasmodium Ovale*, and *Plasmodium malariae*. Malaria caused by *P. vivax* is more common than malaria caused by *P. falciparum*.^[11,12] However, disease severity and complications are more described in falciparum malaria.^[13]

Case Report

A 23-year-old Bangladesh male worker in a cleaning company was admitted to the Al Nuaman Teaching Hospital on May 22, 2018, with high-grade fever and abdominal pain of 2 days duration. Fever was high grade from the beginning, sometimes with

How to cite this article: Hanoon BD. Imported vivax malaria: A case report and a literature review. Iraqi J Hematol 2020;9:166-9.

Department of Laboratories, Hematology Unit, Al Nuaman Teaching Hospital, Baghdad, Iraq

Address for correspondence:

Dr. Basma Dawood Hanoon, Al Nuaman Teaching Hospital, Baghdad, Iraq. E-mail: basma.dawood@ live.com

Submission: 07-02-2020 Accepted: 05-04-2020 Published: 10-11-2020 swinging rise, and was associated with chills and rigors. The patient experienced profuse sweating when the fever subsided. Fever was associated with headache, myalgia, and fatigue. He had no significant event in the past few months except his return from Bangladesh. In medical history, he had been diagnosed with malaria since childhood. When we examined the patient, he was very toxic, his temperature was 39.5°C, pulse rate 120/min, and blood pressure 110/70 mmHg. Anemia, jaundice, cyanosis, and clubbing were absent. Jugular venous pressure was not raised. The abdomen was soft and tender. The examination finding of respiratory, cardiac,



Figure 1: Blood flim for malarial parasite showing trophozoite stage of *Plasmodium vivax* within red blood cells (×100)



Figure 3: Blood flim for malarial parasite showing microgametocyte stage of *Plasmodium vivax* within red blood cells (×100)



Figure 5: Blood flim for malarial parasite showing oval shape gametocyte stages of *Plasmodium vivax* within red blood cells (×100)

Thick and thin blood films confirmed the presence of *P. vivax.* Multiple stages of *P. vivax*, including trophozoites, schizonts, and gametocytes, were detected in the blood smears as shown in figures [from Figures 1–9]. The patient started to improve from the following day after



Figure 2: Blood flim for malarial parasite showing macrogametocyte stage of *Plasmodium vivax* within red blood cells (×100)



Figure 4: Blood flim for malarial parasite showing young schizont stage of *Plasmodiumvivax* within red blood cells (×100)



Figure 6: Blood flim for malarial parasite showing schizont stage of *Plasmodium vivax* within red blood cells (×100)

Hanoon: Imported vivax malaria basma dawood hanoon



Figure 7: Blood flim for malarial parasite showing double-ring stage of *Plasmodium vivax* within red blood cells (×100)



Figure 8: Blood flim for malarial parasite showing microgametocyte stage of *Plasmodium vivax* within red blood cells (×100)



Figure 9: Blood flim for malarial parasite showing ring stages of *Plasmodium vivax* within red blood cells (×100)

starting antimalarial drugs. Pain and fever subsided, and the patient was able to eat, drink, and perform all daily activities within 3 days and was discharged from the hospital without any complication. One-month postdischarge remained well, and subsequent blood films were negative.

Discussion

Regarding screening program for the importation of vivax malaria by asymptomatic worker, as blood films could be repeatedly negative for malaria parasites during the exoerythrocytic phase of the life cycle, so the pickup rate of malaria parasites among asymptomatic foreign workers was extremely low, at around 0.1%,^[14] patients who have resided from endemic countries and have shown signs of febrile symptoms should be considered for imported malaria.^[15]

The patient's delay and doctor's delay are well-described risk factors for mortality in imported malaria.^[16] Because delays in diagnosis are associated with an increased risk of developing severe malaria, requirement for intensive care,^[17,18] and death.^[19] Thrombocytopenia (platelet levels <150 × 10⁹/L) is a characteristic feature of malaria, present in around 45%–71% of imported malaria in both children and adults.^[20] Thrombocytopenia in children with fever is highly predictive of malaria following travel to a malaria-endemic area.^[21] It is important to consider fever seriously when dealing with those job seekers coming from a malaria risk area.^[22]

Conclusion

Bad control of malaria in endemic countries is likely to increase the risk of malaria among travelers and job seekers.

Blood film remains the gold standard diagnostic technique and is the only tool that can distinguish asexual from sexual parasitemia. Thick and thin smears \pm rapid diagnostic tests should be performed on all febrile returned travelers from risk areas.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/ have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Bruneel F, Tubach F, Come P. Sever imported falciparum malaria:

Hanoon: Imported vivax malaria basma dawood hanoon

A cohort study in 400 critically ill adults. PLoS One 2010;5:E13236.

- World Health Organization; 2014. World Malaria Report. Geneva: World Health Organization; 2012. Available from: http://www. who.int/malaria/publications/world-malaria-report-2014. [Last accessed on 2019 Nov 07].
- World Health Organization. WHO EMRO. Malaria Programmes Iraq. World Health Organization; 2018. Available from: http:// www.emro.who.int/malariairq. [Last accessed on 2019 Nov 07].
- World Health Organization. Malaria Terminology. Geneva: World Health Organization; 2016. Available from: http://www.who. int. [Last accessed on 2019 Nov 07].
- Martens P, Hall L. Malaria on the move: Human population movement and malaria transmission. Emerg Infect Dis 2000;6:103-9.
- 6. Tamia AJ, Smith DL. International population movement and regional *Plasmodium falciparum* malaria elimination strategy. Proc Natle Acad USA 2010;107:12222.
- Andriopoulos P, Economopoulou A, Spanakos G, Assimakopoulos G. A local outbreak of autochthonous *Plasmodium vivax* malaria in Laconia, Greece – A re-emerging infection in the Southern borders of Europe? Int J Infect Dis 2013;17:e125-8.
- Albuquerque HG, Peiter PC, Toledo LM, Sabroza PC, Pereira RD, Caldas JP, *et al.* Imported malaria in Rio de Janeiro state between 2007 and 2015: An epidemiologic approach. Mem Inst Oswaldo Cruz 2019;114:e190064.
- de Pina-Costa A, Brasil P, Di Santi SM, de Araujo MP, Suárez-Mutis MC, Santelli AC, *et al.* Malaria in Brazil: What happens outside the Amazonian endemic region. Mem Inst Oswaldo Cruz 2014;109:618-33.
- Lorenz C, Virginio F, Aguiar BS, Suesdek L, Chiaravalloti-Neto F. Spatial and temporal epidemiology of malaria in extra-Amazonian regions of Brazil. Malar J 2015;14:408.
- 11. Kasliwal P, Rao MS, Kujur R. *Plasmodium vivax* malaria: An unusual presentation. Indian J Crit Care Med 2009;13:103-5.

- 12. Mendis K, Sina BJ, Marchesini P, Carter R. The neglected burden of *Plasmodium vivax* malaria. Am J Trop Med Hyg 2001;64:97-106.
- Sreehari D, Sigh VB, Chetan KH, Babulal MP. Vivax malaria causing subconjuctival haemorrhage: Case report. J Bacteriol Parasitol 2013;4:225.
- Lee YC, Tang CS, Ang LW, Han HK, James L, Goh KT. Epidemiological characteristics of imported and locally-acquired malaria in Singapore. Ann Acad Med Singapore 2009;38:840-9.
- Arben N, Diana H, Anduena N, Klodiana S, Dhimiter K, Najada Ç, et al. Case report epidemiological, clinical and therapeutic aspects of cerebral malaria imported in Albania. J Infect Dev Ctries 2016;10:190-4.
- Newman RD, Parise ME, Barber AM, Steketee RW. Malaria -related deaths among U.S. travelers, 1963-2001. Ann Intern Med 2004;141:547-55.
- 17. Ladhani S, El Bashir H, Patel VS, Shingadia D. Childhood malaria in East London. Pediatr Infect Dis J 2003;22:814-9.
- McCaslin RI, Pikis A, Rodriguez WJ. Pediatric *Plasmodium falciparium* malaria: A ten-year experience from Washington, DC. Pediatr Infect Dis J 1994;13:709-15.
- 19. Cunha BA. The diagnosis of imported malaria. Arch Intern Med 2001;161:1926-8.
- Ladhani S, Patel VS, El Bashir H, Shingadia D. Changes in laboratory features of 192 children with imported falciparum malaria treated with quinine. Pediatr Infect Dis J 2005;24:1017-20.
- 21. Patel U, Gandhi G, Friedman S, Niranjan S. Thrombocytopenia in malaria. J Natl Med Assoc 2004;96:1212-4.
- 22. Chiodini PL, Patel D, Whitty CJ, Lalloo DG. Guidelines for Malaria Prevention in Travellers from the United Kingdom. London: Public Health England; October, 2017. Available from: https://www.gov.uk/government/publications/ malaria-prevention-guidelines-for-travellers-from-the-uk for the most up to date version. [Last accessed on 2020 May 22].