Plasmodium Vivax Infection Impersonating Plasmodium Falciparum Malaria

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Introduction

Malaria infection is endemic in many regions of India. Massive numbers of malaria cases are reported every year. The common species being reported are *Plasmodium vivax* (Pv) and *Plasmodium falciparum* (Pf) with *Plasmodium vivax* accountable for more number of cases (60-65%) compared to the latter (35-40%) [1]. Among those infected with *P. Vivax*, most present with typical and predictable features. However, there are atypical cases where the infection presents with characteristics suggestive of *P. falciparum*. Cerebral malaria, renal failure and thrombocytopenia are known to be associated with severe and complicated falciparum malaria. Generally, these complications if present with *P. vivax* malaria are attributed to mixed infection by both the species [2]. Rarely, these complications can also be seen with only *P. vivax* infection [3]. We report one such case of *Plasmodium vivax* malaria in an adult female presenting predominantly with cerebral, renal and haematological complications.

Case Report

A 73-year-old woman was admitted in critical state with a history of syncopal attack four days earlier, following which she complained of weakness and fever with chills and rigors for one day. On examination, her blood pressure was 110/80 mmHg. Capillary glucose levels were within normal limits. Treatment for *P. vivax* was started with intravenous quinine initially followed by oral quinine for a period of seven days and patient responded to the treatment and was discharged within 2 weeks of admission. Most of the cases of *P. vivax* present with typical and predictable features, although atypical cases with characteristics of *P. falciparum* can occur, especially in the elderly.

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creatinine (2.1 mg/dL) along with hypokalemia (2.7 mEq/l). Serum sodium levels were within normal limits. Liver enzymes were grossly normal. She was treated with intravenous quinine initially followed by oral quinine for a period of seven days. Her haematological and biochemical parameters came within normal range. She was discharged in a clinically stable condition and was advised to take a 14 day course of primaquine.

Discussion

Plasmodium vivax in its typical course presents with regular paroxysms of fever associated with chills and rigors, headache, fatigue and muscle aches, whereas P. falciparum along with the typical febrile response and “viral syndrome” is known to present with potentially fatal complications. Severe P. falciparum malaria has been known to produce several complications such as cerebral malaria, thrombocytopenia, renal failure, anaemia and others. Though being more commonly seen in P. falciparum malaria, P. vivax infection is rarely associated with all the above mentioned complications [3-10]. Kochar et al. [3] in their study of 1,091 malaria patients reported the incidence of renal failure in 45%, anaemia in 32.5%, and cerebral malaria in 12.5% and thrombocytopenia in 12.5% of the total number of patients diagnosed with P. vivax presenting with severe complications.

Diagnosing malaria in this modern era is no challenge to any medical professional. The definitive diagnosis of malaria generally requires direct visualization of the malaria parasite in Giemsa-stained thick and thin blood smears, which have been the gold standard for many years in laboratories all over the world to identify infection by any of the four malaria species. Though the sensitivity of the diagnosis of malaria by microscopic identification is high (98%), a study done by Parija et al. [11] showed that the species specific thin smear carries a sensitivity of 54.8%, while tests like Histidine-rich protein 2 of P. Falciparum (PfHRP2) dipstick or Plasmodium Lactate Dehydrogenase (LDH) dipstick, which are increasingly being employed in day to day practice to detect individual species due to the emergence of unusual presentations seen with P. vivax in the recent years reported a sensitivity of 92.3%. The major disadvantage of employing Antigen tests on a routine basis is the variability in the sensitivity (97%-59%) in diagnosing malaria, which depends on the parasite levels of the blood. In addition to newer rapid diagnostic tests like ParaSight-F, Immunochromotagraphic (ICT) Pf and ICT Pf/Pv, molecular techniques such as real time polymerase chain reaction with a sensitivity and specificity of 100% and nucleic acid sequence-based amplification can also aid in the diagnosis, however these tests are cumbersome and expensive especially in developing countries.

Over the past few decades we have come across a large number of P. vivax malaria cases which can be easily diagnosed with a complete and detailed history and routine peripheral blood picture report. Lately, cases have been identified of P. vivax infection with complications which were earlier attributed to P. falciparum malaria. The exact reason for this has not been clearly identified [7]. The diagnosis of these cases becomes a challenge for the medical practitioner because there may be a mixed infection by both P. vivax and P. falciparum species with P. falciparum not visible in routine peripheral smear and antigen detection tests (if the parasite levels are low) making the diagnosis and treatment offered indecisive.

Management of P. vivax and P. falciparum malaria differs in view of the emerging resistance to chloroquine observed in P. vivax and P. falciparum over years. Although there have been reports of Chloroquine resistance in P. vivax in India, Southern Asia and Brazil, the drug of choice for treating P. vivax in India over the last decade remained Chloroquine as the majority were found sensitive to chloroquine. Being uncomplicated most often, vivax infection is treated with the standard three day chloroquine course followed by primaquine whilst artemesunate has replaced chloroquine as the first line drug to combat chloroquine resistant falciparum malaria. In view of this resistance being increasingly reported in P. vivax malaria in recent years, it becomes essential to resort to therapy with quinine or artemins as sulphadoxine with pyrimethamine course is not effective in P. vivax treatment. Ergo in severe complicated malaria and resistant cases it becomes necessary to start the patient on either quinine or artemesunate without a further delay.

In the coming years, this type of odd presentations may become more frequent and may even present with various atypical presentations and complications. Routine tests also should include rapid diagnostic tests and Polymerase chain reaction (PCR) to detect isolated P. vivax infections vs. mixed infections, as the card test alone will lead to underestimating and missing of mixed infections. Early suspicion, along with aggressive supportive treatment, may be life-saving in these types of odd presentations. Severe vivax malaria should be considered in the differential diagnosis of patients presenting with fever and multi-organ dysfunction syndromes.

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References


5. Sarkar S, Bhattacharya P. Cerebral malaria caused by Plasmodium vivax in adult subjects. Indian J Crit Care Med 2008; 12: 204-5. [CrossRef]


