

Post-Transfusion Malaria in a Hemodialyzed Patient: First Case Report in Morocco

A. A. Jaouahar^{1*}, M. Chakib¹, M. Belarbi¹, A. Maoujoud¹, M. Asserraji¹, N. Zemraoui¹

¹Nephrology Department, Avicenna Military Hospital, Marrakesh, Morocco

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*Corresponding author: A. A. Jaouahar

Nephrology Department, Avicenna Military Hospital, Marrakesh, Morocco

Abstract

Case Report

We report the first case to our knowledge of post-transfusion malaria in a hemodialyzed patient in Morocco. This case highlights the risk of transfusion-transmitted infections in such a polytransfused population, even in non-endemic countries. Enhancement of hemovigilance protocols and infectious screenings are essential to manage this potentially life-threatening condition.

Keywords: Post-transfusion malaria, Hemodialysis, Morocco, Hemovigilance, Infectious screenings.

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INTRODUCTION

Transfusion-transmitted malaria is a rare condition with serious consequences if not treated for the recipient [1]. In malaria-endemic areas, most of the data obtained are from potential blood donors; therefore, they only measure the potential risk of malaria from blood transfusions [2]. In non-endemic areas such as Morocco, the incidence of transmission of malaria by transfusion is very low. Hence, donated blood is not routinely screened for malaria parasites. We report the first documented case of our knowledge of transfusion-transmitted malaria due to *Plasmodium falciparum*, which happened in a chronic hemodialyzed patient.

CASE PRESENTATION

A 45-year-old female with end-stage renal disease on regular hemodialysis presented with fever and fatigue two weeks after receiving a red blood cell transfusion for anemia. She had no travel history to malaria-endemic regions, ruling out the possibility of vector-borne transmission.

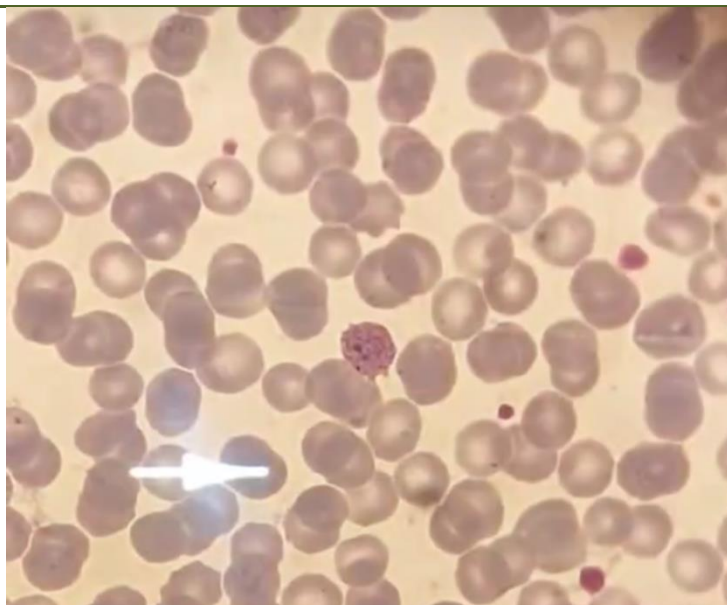
Physical examination revealed fever up to 39°C and splenomegaly. Laboratory tests showed

pancytopenia: White blood cells 2390/mm³, hemoglobin at 9.5 g/dL, and platelets at 91000/mm³. Negative microbiological investigations were found for Epstein–Barr virus, hepatitis B virus and hepatitis C virus. The urinary culture was also negative. An osteomyelobiopsy was performed, which showed hypercellulated bone marrow with reactive type changes.

On the third week of hospitalization, the patient had a worsening health condition due to the persistence of fever and pancytopenia. Peripheral blood smear microscopy exam confirmed the presence of *Plasmodium falciparum*.

Regarding the donor, we revealed that he was a military with a history of a mission in tropical regions, returning four months ago before donation, hence totally asymptomatic. *Plasmodium falciparum* was also found in donor blood, confirming the causal link.

The patient was treated with oral protocol of artemether-lumefantrine. Her clinical condition improved rapidly, and subsequent blood smears were negative for malaria parasites. Thrombopenia however, lasted for no shorter than two weeks.



The patient's peripheral blood smear microscopy exam showing *Plasmodium falciparum*

DISCUSSION

Transfusion-transmitted malaria is an accidental *Plasmodium* spp. infection caused by a whole blood or blood component transfusion from a malaria-infected donor to a recipient. The first case of malaria as an accidental consequence of blood transfusion was described in 1911 by Woolsey [3]. Thirty years later, Gordon described the first case of transfusion malaria, following the use of stored blood in 1941 [4].

In endemic countries, a systematic review of the relevant literature from Sub-Saharan Africa (SSA) published in the past three decades found 17 studies [2]. This review demonstrates that compared with other transfusion-transmitted infections, the very high prevalence of malaria among blood donors has been widely ignored. The median prevalence of malaria in blood donors or donated blood was found around 10% versus HIV (0.5% to 16%), hepatitis C virus infection (0.5% to 12.3%), hepatitis B virus infection (2.5% to 20%) [5].

In non-endemic areas, prevalence of transfusion transmitted malaria has widely reduced since the 1960s [6]. A 2018 systematic review showed that, even in non-endemic areas, TTM risk needs to be taken into consideration in order to enhance the safety of the blood supply chain from donors to recipients by means of appropriate diagnostic tools [7]. One hundred case reports of TTM were retrieved: (54 of these case reports occurred in the American continent, 38 in Europe, 3 in the Mediterranean area, 1 in India, 4 in South-East Asia). This study had shown that: The *Plasmodium* species most involved in TTM were *P. falciparum* and *P. malariae*. This parasite is not known to remain so long in blood, but it is unique by the phenomenon of hepatic hypnozoites. The incubation period was longer than the average IP for mosquito-transmitted malaria, which may

be a further reason for lack of suspicion and diagnostic delay. Almost all TTM cases were caused by whole blood and/or RBCs transfusion, as expected, but for two cases by platelets and one by plasma only [7].

Our case illustrates the risk of transfusion-transmitted malaria in non-endemic regions among such a consequent blood demanding population of hemodialyzed patients. It shows the importance of thorough screening of blood donors, especially those who have traveled to or are from malaria-endemic areas. It also highlights the necessity for healthcare providers to consider malaria in the differential diagnosis of febrile post-transfusion illness.

CONCLUSION

Post-transfusion malaria, although rare, is a serious complication that requires prompt diagnosis and treatment. Currently, microscopy in peripheral blood smear is considered the gold standard for the diagnosis of malaria but has limited sensitivity to detect low levels of parasitemia. Screening using serological and molecular tests, combined with the donor's questionnaire, should be used to reduce the cases of TTM. This first case report in such a unique population in Morocco emphasizes the need to stringent blood donor screening protocols to prevent such occurrences in the future.

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