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CLINICAL COMMUNICATION TO THE EDITOR

Transfusion-Transmitted Malaria: How Satisfactory Are Current Preventative Measures?

To the Editor:

A 67-year-old Hispanic man presented with 3 days of fever and lethargy. He was stuporous with a temperature of 101.5°F. Three weeks earlier, he received 2 units of packed red blood cells.

Laboratory studies indicated severe hemolytic anemia (hemoglobin, 5.1 mg/dL) and thrombocytopenia (platelet count, 89 000/mm^2), and the blood smear revealed *Plasmodium falciparum* parasites involving 17% of the erythrocytes.

The patient underwent exchange blood transfusion and received intravenous quinidine and doxycycline followed by sulfadoxine/pyrimethamine.

The patient had never traveled to malaria-endemic areas.[1] Further investigation revealed that one of the patient's blood donors was an 18-year-old man from Ghana who claimed he had immigrated to Houston 2 years before donating blood, but the time was actually 9 months. Tests of that donor's blood were negative for plasmodium species by blood smear and polymerase chain reaction; however, immunofluorescence testing showed remarkably elevated titers for *P. falciparum* antibodies.[1] The high antibody titer and clinical epidemiology supported the likely diagnosis of transfusion-transmitted malaria.

DISCUSSION

Although the majority of malaria cases in the United States are acquired from traveling to endemic areas, Plasmodium organisms can rarely be transmitted through blood transfusion. The rate is estimated at less than one case per million units of blood collected. In the absence of a suitable screening test, current guidelines, adopted by the Food and Drug Administration[3] and the American Association of Blood Banks,[4] recommend obtaining a thorough travel history and deferring donation if potential donors have visited a malaria-endemic area in the preceding year or emigrated from such areas within the preceding 3 years. In the present case, the donor should have been excluded even on the basis of his claim of immigration 2 years earlier.

Mungai et al.[2] reported that 93 cases of transfusion-transmitted malaria occurred in the United States from 1963 to 1999 with a mortality rate of 11%. *P. falciparum* was responsible in 35% of the cases. Two-thirds of the cases would have been excluded under the aforementioned guidelines, whereas 23 cases would not have been prevented. In several case reports,[5-8] the elapsed time between immigrating and donating blood was as long as 13 years (4-13 years), and all donors were asymptomatic.

How do individuals infected with malaria remain asymptomatic for long periods of time? Chronic exposure to parasites or partial treatment with antimalarial agents can result in partial immunity with a prolonged asymptomatic infective state. A favorable genetic background seems to be a predisposing factor. Suggested involved genes include hemoglobinopathies (sickle cell trait, glucose-6-phosphate dehydrogenase deficiency) and parasite growth inhibitor factors (tumor necrosis factor gene promoter polymorphisms).[9]

Because current guidelines for the prevention of transfusion-transmitted malaria are not fail-safe, awareness among the public and health care professionals and prompt diagnosis and treatment are therefore mandatory to improve clinical outcomes.

Firas Alkassab, MD
Division of Rheumatology
Department of Internal Medicine
The University of Texas Medical School at Houston
Houston, Tex.

Charles D. Ericsson, MD
Clinical Infectious Diseases
Division of Infectious Diseases
The University of Texas Medical School at Houston
Houston, Tex.

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Requests for reprints should be addressed to Firas Alkassab, MD, University of Texas Medical School at Houston, Rheumatology, MSB 5.241, 6431 Fannin Street, Houston, TX 77030.

E-mail address: Firas.Alkassab@uth.tmc.edu.

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