Mixed *Plasmodium falciparum* and *Plasmodium vivax* Malaria in Orthotopic Liver Transplant Recipient

Malaria is an unusual complication in organ transplant recipients. There are infrequent reports in liver transplant recipients, describing only single infection caused by *Plasmodium falciparum* or *Plasmodium vivax* species (*1–7*). We report, for the first time, mixed *P. falciparum* and *P. vivax* malaria presenting 44 days after deceased donor orthotopic liver transplantation.

A 30-year-old man underwent orthotopic deceased donor liver transplantation for cryptogenic cirrhosis. The donor, a 50-year-old woman with subarachnoid hemorrhage, had no fever during or before her illness. Two units of red cells were transfused during the liver transplantation. Triple immunosuppression with tacrolimus, mycophenolate mofetil, and corticosteroids was instituted. The patient developed hepatic artery thrombosis on day 2, which was managed by re-exploration and fashioning of a new conduit. An episode of acute cellular rejection on day 7 was managed with methyl prednisolone. On day 44, he developed intermittent fever (maximum temperature 105°C) with chills. The spleen, which had regressed, was again palpable 3 cm below the left costal margin. Hemoglobin was 11 G/dL, white cell count 10,500/mm^3, and chest skiagram was unremarkable. Peripheral blood film showed ring forms of *P. falciparum* and *P. vivax*. Immunochromatographic test for *P. falciparum* was positive. Blood culture was sterile and contrast-enhanced computed tomography scan of abdomen did not reveal any other cause for fever. He was treated with a combination of quinine sulfate (10 mg/kg 8 hourly infusion in 5% dextrose for 3 days, then 600 mg orally three times per day for 7 days) and artemether 3.2 mg/kg intramuscularly as loading dose followed by 1.6 mg/kg/day intramuscularly for 5 days. Even though the malarial parasite was undetectable in peripheral smear, he continued to be febrile. As quinine and artemether are not effective against *P. vivax*, chloroquin hydrochloride (600 mg base on day 1, 600 mg on day 2, and 300 mg on day 3) was added on day 10 (*8*). He continued to be febrile and achieved defervescence of fever only after Tab Mefloquine (15 mg/kg base as single dose) was administered. There was no significant increase in transaminases during the antimalarial therapy. Immunosuppression was not decreased in view of the previous episode of cellular rejection. He remained well at 24 months follow-up.

Mixed infections with falciparum and vivax are uncommon and an overall negative interaction has been observed (*9*). It has also been suggested that patients with mixed infections have higher range of fever (*10*). This is the first report of malaria after liver transplantation from India, and dual infection points toward a fresh infection caused by mosquito bite after transplantation. Induction of malaria from the transplanted liver or transfusion-associated malaria is unlikely because of the temporal profile.

This case illustrates that in the posttransplant setting in an endemic zone, malaria should be considered as a cause of unexplained fever. Prolonged treatment with several antimalarials may be required.

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