A pregnant Japanese woman returning from Africa with recurrent fevers

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Abstract: Certain clinical aspects of vivax malaria are no longer defined as benign. We present a case of vivax malaria with three relapses in a pregnant Japanese woman who had returned to Japan from the Comoros Islands in East Africa. Data on the successful delivery, examination of Duffy-blood group antigen, and microscopic findings of growing stages of Plasmodium vivax are thought to be of considerable interest.

Keywords: vivax malaria, Duffy-blood group, pregnancy

Introduction

There is growing evidence that the impact of Plasmodium vivax has been underestimated in developing and poor countries.¹² The difficulty of differential diagnosis and lack of proper treatment of both blood-stage and latent parasites are two of the reasons for the prevalence of vivax malaria.

Case report

A 28-year-old Japanese woman who had been married to an African man and lived in the Comoros Islands for 1 year was admitted to our hospital in Japan because of chills and severe headache. She was 30 weeks pregnant and had taken medication against malaria 2 months previously when she was in Africa.

Laboratory findings showed leukocyte (6,600/µL) and platelet (6.6 × 10⁴/µL) counts, as well as hemoglobin (9.7 g/dL), C-reactive protein (CRP; 19.2 mg/dL), fibrin/fibrinogen degradation products (FDP) (35.1 µg/mL), and FDP D-dimer (38.5 µg/mL) levels. Giemsa staining of peripheral blood using pH 7.4 buffer showed that 1.8% of the erythrocytes were infected by Plasmodium. After the ring form, schizont, and gametocyte of this parasite were determined (Figure 1), the results of the subsequent rapid diagnostic test and DNA assay led to a diagnosis of vivax malaria.

Seven-day medication (quinine 1500 mg/day) against malaria, administered under strict observation and with the patient’s agreement, led to remission. However, vivax malaria relapsed in the 34th week of pregnancy. The presence of latent parasites was suspected to be the cause of the fevers. The next quinine administration resulted in another remission. To exterminate the latent parasites, we assessed mother and child blood glucose-6-phosphate dehydrogenase (G6PD) activities after 39th week spontaneous vaginal delivery, after which she was treated again with primaquine (15 mg/day; 14 days). The new born baby’s weight was 2850 g. There were no
abnormalities in either the baby or the placenta. There was no
to-child transmission. Mother and child are healthy
6 months of anti-relapse therapy.

Discussion
Four distinct Plasmodium species are known to regularly
infect humans: P. falciparum, P. vivax, P. malariae, and
P. ovale. Certain clinical aspects of vivax malaria are not
defined as benign anymore because relapse, severe clinical
cases, and drug resistance have been reported for P. vivax.1–3
Relapse of P. vivax and P. ovale is known to be triggered by
dormant hypnozoites in the liver.2

Plasmodium falciparum malaria is defined as malignant
and is a major public health problem in Africa, including
the Comoros Islands,4 while vivax malaria is the major
cause of malaria outside Africa, mainly afflicting Asia and
the Americas.2 Why would vivax malaria be less prevalent
in Africa? It is known that Africans with Duffy-blood group
antigen negative erythrocytes cannot be infected by P. vivax,5
because it requires the Duffy-blood group antigen as an
obligate receptor for invasion,6 and the Duffy-blood group
antigen negative phenotype Fy(a− b−) frequently occurs in
the native African.7,8

On the other hand, treatment of symptomatic vivax malaria
during pregnancy is very difficult. It may lead to
preterm delivery and fetal loss, and neonates of non-immune
mothers may be at a particular risk of congenital malaria
resulting from transplacental passage of parasites.9 Quinine
as well as chloroquine are the drugs of choice for the treat-
ment of vivax malaria. Primaquine, the only therapeutic
option for these dormant tissue forms, is contraindicated
during pregnancy because of the risk of fetal hemolysis.10
Even more noteworthy, low-birth weight associated with
vivax malaria has also been reported during second and
subsequent pregnancies.11

We reported here repeated recurrences of vivax malaria
in a Japanese primigravida from the Comoros Islands. Since
the Duffy-blood group antigen of our patient was Fy(a+ b−),
our findings support the notion that we should pay careful
attention to the occurrence of P. vivax even in Africa,12 in
addition to the numerous local Duffy-blood group antigen-
negative populations.

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