Airport malaria: report of a case and a brief review of the literature

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ABSTRACT

We report a case of Plasmodium vivax malaria in a patient who had not visited an endemic area. The ways in which malaria can be transmitted in non-endemic areas are discussed. By the elimination of other possibilities, the diagnosis of airport malaria was made. Airport malaria is a rare and often initially overlooked diagnosis. Since 1969, some 89 cases of airport malaria have been reported.

INTRODUCTION

Malaria occurs throughout most of the tropical regions of the world. In febrile patients in non-endemic areas, an accurate travel history may reveal the essential clue to the diagnosis of malaria. Without a history of travelling to areas where this protozoan disease is transmitted, the diagnosis of malaria is highly unlikely, but not excluded. A case of Plasmodium vivax malaria in a patient who had not visited an endemic area is reported.

CASE REPORT

In August 2001, a 43-year-old woman was seen in the outpatient clinic for internal medicine because of persisting fever without other symptoms. The fever started five days after the return of a trip by car to Sweden. She lived and worked in the western part of Amsterdam and had never visited a country outside Europe. The patient had been treated with amoxyccillin-clavulanic acid without any improvement.

On physical examination a moderately ill woman was seen. Her body temperature was 40.1°C, the blood pressure 120/80 mmHg with a pulse rate of 100 beats/minute. Further examination showed no abnormalities. Laboratory investigations revealed an ESR of 28 mm/hour, leucopenia (2.9 x 10⁹/l) with a lymphocytopenia (0.55 x 10⁹/l), thrombocytopenia (55 x 10⁹/l) and slightly elevated liver enzymes (ASAT 73 U/l, ALAT 110 U/l, GGT 100 U/l, LDH 589 U/l). Blood cultures remained negative.

Serological tests (MEIA, Abbott) showed elevated IgM and IgG antibodies to cytomegalovirus (CMV). The CMV-IgM index was 2.5 (the cut-off point of positive is 0.5). The CMV-IgG titre was 142 U/ml (a titre >15 U/ml is considered to be positive). Therefore, a recently acquired CMV infection was suspected. Within five days her body temperature returned to normal and the laboratory investigations normalised.

However, after two weeks the fever returned with a spiking pattern in a 48-hour cycle (figure 1). She now complained of shivering, night sweats and muscular pains. The laboratory investigations revealed anaemia (5.9 mmol/l). The white blood cell count, platelet count and liver enzymes were in the normal range. A thorough history was taken. Our patient had never travelled outside Europe and therefore malaria was considered as highly unlikely. However, because of the periodic nature of the fever her general practitioner had ordered a blood smear for malaria. To our surprise this smear and a repeated smear were positive for P. vivax with a parasitaemia of <1%.

Since our patient lived in the surroundings of the international airport Schiphol, we assumed that she was suffering from airport malaria.
The patient was treated with chloroquine base (600 mg first day, 600 mg second day, 300 mg third day), followed by primaquine (15 mg daily) for 14 days. She made a full recovery and the laboratory abnormalities normalised.

**DISCUSSION**

We report a case of *P. vivax* malaria in the Netherlands in a patient who had never travelled to malaria endemic areas. We have no doubts about the precision of her travel history. Indigenous malaria caused by *P. vivax* has not been seen in the Netherlands since 1958 and in Sweden since 1910.

In patients without a history of travelling to malaria endemic areas, some rare cases of malaria have been reported as transfusion malaria, nosocomial malaria and airport or port malaria. Transfusion malaria can occur through transmission of Plasmodium-infected blood products. Nosocomial malaria has been reported as malaria transmitted by needlestick injuries, contact of blood to an open wound or through injection fluid accidentally contaminated with Plasmodium due to failing hospital hygiene. Airport malaria, and even more rarely port malaria, is acquired through the bite of a tropical anopheline mosquito in people whose geographical history excludes exposure to this vector in its natural habitat.

In airport malaria, the mosquito can be dispersed as far as seven kilometres under favourable wind conditions or may have been transported in baggage or in a motor vehicle after disembarking from the aeroplane for tens of kilometres. At such distances from the airport there may be little suspicion that a patient’s illness is caused by malaria. Two cases of presumed airport malaria have been reported in the Netherlands. Similar to the above-mentioned patient, these cases also occurred in the surroundings of Schiphol during the month of August. During the summer season the temperature may facilitate the survival of the imported vector. Between 1969 and 1999, 89 cases of airport malaria were reported, most of them in France, Belgium and the United Kingdom. The occurrence of a relatively large number of cases of airport malaria in these countries reflects the large number of flights arriving from endemic malaria countries. The majority of cases of airport malaria were caused by *Plasmodium falciparum*. Long delay in achieving the correct diagnosis of airport malaria may account for a relatively high mortality of 6% in France and Belgium.

Our patient had never received any blood products and had not been injured by needlesticks. She lives and recreates near the international airport Schiphol. By elimination of other possibilities, we concluded that our patient suffered from airport malaria. In retrospect, the first episode of
fever in our patient could have been the first symptom of malaria with a false-positive reaction of CMV-IgM antibodies.

Although the risk of airport malaria seems to be very low, medical practitioners should remain aware of the rare possibility of malaria in patients presenting with fever, who have travelled by plane, stayed at international airports or who live near an international airport or port.

REFERENCES