An unusual tropical borreliosis diagnosis in a teenager coming back from Senegal

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Introduction

Relapsing fever (RF) is a bacterial disease caused by different species of *Borrelia*, characterized by recurrent febrile episodes. Two categories of RF are known to affect humans: the tick-born relapsing fever (TBRF) and the louse-born relapsing fever (LBRF).

Tick-born relapsing fever is due to *Borrelia crocidurae*, one of the endemic species in West Africa and particularly in Senegal (1,2).

There are very few cases of TBRF in France which are always imported cases because the *Ornithodoros* vector species does not exist in France (3).

We report a case of *B.crocidurae* infection with malaria-like symptoms in a teenager coming back from Senegal.

Case presentation

A 15-year-old patient was referred to our Pediatric Emergency Unit four days after he returned from Senegal. His symptoms were fever, recurrent headaches and vomiting.

He travelled in Senegal (Dakar and the North of Dakar) from July to August 2017. he took one Mefloquine pill 10 days before departure and forgot to take it for the rest of his travel. He used insect repellent and for few nights slept under a mosquito net. He did not have any contact with animals.

Four days after his return, he presented severe morning headaches without fever, which started on the evening.

In the emergency room, his temperature was 40°C, his blood pressure 110/65 mmHg and his pulse 100 beats per minute associated with vomiting and headaches. The rest of the examination was normal.

Biological investigations showed a mild thrombocytopenia of 100 G/l, low prothrombin rate 56%, CRP was 40 mg/l and PCT 17 mg/l. Cerebrospinal fluid analyses were normal. Quantitative Buffy Coat (QBC) excluded the diagnosis of malaria, however blood smear showed few forms of spirochete (Fig1).

We therefore suspected a TBRF and started treatment immediately.

The presence of *B. crocidurae* was identified after amplification and sequencing of 16S rRNA gene from blood sample and confirmed by the National reference center for Borreliosis (Strasbourg).

The patient was given doxycycline 100 mg twice a day for 10 days, resulting in apyrexia 24 hours later and successful treatment without neurological complication.

Fig 1: Clinical case of tick-born relapsing fever. Patient's blood smear colored by MGG (May Grunwald Giemsa) observed by microspoc x1000 showing a spirochete (red arrow).

Discussion

The pathogen *B.Crocidurae* is transmitted to a human being by the tick *Alectorobius sonrai* which lives on rodents and other insectivores. With an annual incidence of 11% for over 14 years, this is the most common bacterial disease in Africa (4). The first episode of fever is the most important, lasting 3 to 4 days, often accompanied with headache, tachycardia, and sometime with vomiting and asthenia (5).

The diagnosis is difficult to establish, it is easier during the peak of the fever, but the microbiologist needs to be trained. Amplification of the 16S rRNA gene using PCR is the most sensitive method and provides a rapid diagnosis.

In Senegal, in front of a symptomatology similar to that of our patient, malaria is most of the time suspected firstly, , and treatment for malaria ensues even without a confirmation of the diagnosis.

Conclusion

Foreigners visiting African countries are concerned by endemic TBRF which is often misdiagnosed as malaria. Direct microscopic visualization of *Borrelia* in blood sample obtained from a febrile patient was unusual, as the number of circulating spirochete decreased rapidly during the episodes of fever. Early introduction of treatment helps to prevent neurological complications. Relapsing borreliosis should be incorporated to all tropical fever syndromic laboratory kits.

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