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Borreliosis: A rare and alternative diagnosis in travellers' febrile illness

S. Gallien[a,*], C. Sarfati[b], L. Haas[c], M. Lagrange-Xelot[a], J.M. Molina[a]

[a]*Department of Tropical and Infectious Diseases, Saint-Louis University Hospital, 1, avenue Claude Vellefaux, 75475 Paris, Cedex 10, France*
[b]*Laboratory of Parasitology, Saint-Louis University Hospital, 1, avenue Claude Vellefaux 75475 Paris, Cedex 10, France*
[c]*Department of Emergency Medicine, Saint-Louis University Hospital, 1, avenue Claude Vellefaux 75475 Paris, Cedex 10, France*

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Summary We report a case of borreliosis mimicking uncomplicated malaria in a patient returning from Mali.

Identification of spirochetes through examination of a thick blood smear completed by an acridine-orange quantitative buffy coat allowed the diagnosis of borreliosis.

All symptoms rapidly resolved following tetracycline therapy.

Epidemiological and clinical features of borreliosis, diagnostic tools and management are discussed.

Introduction

Febrile illness is a frequent reason for medical consulting for travellers returning from tropical areas.[1]

Borreliosis or relapsing fever, a spirochete arthropod-born infection, is a rare imported infection in Western countries although its incidence is probably underestimated.[2,3]

This infection shares with malaria a number of epidemiological features, clinical symptoms and diagnostic tools.

Nevertheless, imported malaria is the most important cause of fever among persons who have recently travelled and represents up to 27% of diagnoses in febrile travellers, whereas borreliosis' incidence reported in this context is less than 1%.[1,4] Moreover, while borreliosis is mostly benign and responds well to tetracycline therapy, malaria caused by *Plasmodium falciparum* can be rapidly fatal if it is not or incorrectly treated.

*Corresponding author. Tel.: +33 1 42 38 54 79; fax: +33 1 42 49 90 67.
E-mail address: sebastien_gallien@yahoo.fr (S. Gallien).

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A case of borreliosis mimicking uncomplicated malaria in a patient returning from Mali is described. The epidemiological and clinical features of borreliosis, available diagnostic tools and therapeutic management are also discussed.

Case report

A 45-year-old man from Mali was admitted to the emergency ward of Saint Louis University Hospital in Paris for a febrile illness that lasted for 3 days.

He had been travelling for 1 month through Mali and he did not take any prophylaxis against malaria. The patient did not notice any arthropod bites.

The day before his return to France, he developed high-grade fever up to 39 °C, chills and headache. Physical examination was normal.

White blood cells count was 3700/μL (28% neutrophils, 54% lymphocytes, 9% monocytes, 9% basophiles) and haemoglobin was 13.1 g/dL. There was thrombocytopenia with a platelet count of 76 000/μL. Liver enzymes were normal. There was a mild elevated serum unconjugated bilirubin levels (18 μM).

Giemsa-stained thin and thick blood smears showed no malaria parasites but acridine-orange-stained quantitative buffy-coat analysis showed unexpectedly spirochetes identified as *Borrelia* (Fig. 1). A second careful examination of the thick smear also showed the same organism (Fig. 2).

Borreliosis was diagnosed and the patient was treated with doxycycline, 100 mg twice a day for 14 days. He recovered quickly and 1 month later, he was free of symptoms.

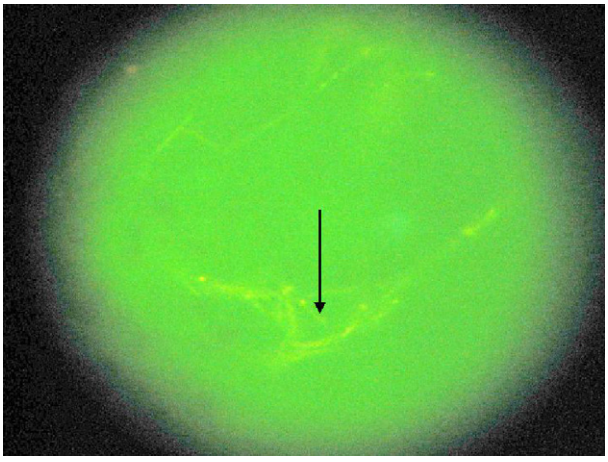

Figure 1 Acridine-orange-stained spirochetes (arrows) as seen in quantitative buffy-coat analysis of blood from our patient. Magnification, × 50 (immersion).

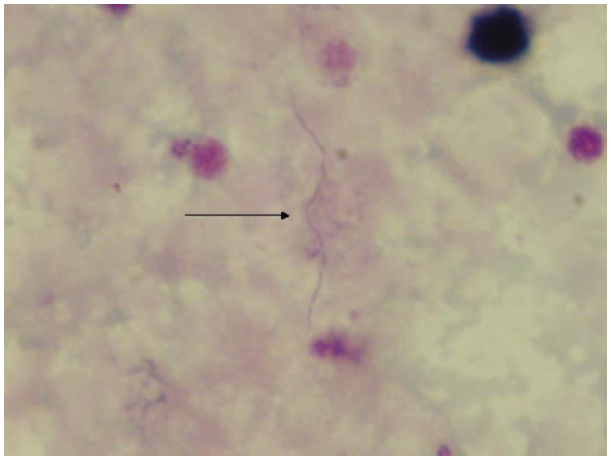

Figure 2 Spirochete (arrow) seen in thick peripheral blood stained with Giemsa. Magnification, × 100 (immersion).

Discussion

Borreliosis is caused by infection with a spirochete from *Borrelia* species.

Borrelia genus is responsible for two groups of human diseases: Lyme borreliosis which is transmitted by hard Ixodes ticks and borreliosis or relapsing fever, which is transmitted usually by soft ticks and more rarely by louses.[5]

Borrelia includes numerous species each with a specific geographical distribution. *Borrelia duttonii* is endemic to several countries in East Africa,[6] whereas *Borrelia crocidurae* is distributed in West Africa.[7] *Borrelia hispanica* is present in Mediterranean countries and transmission has been reported in Spain and North Africa.[3] Sporadic cases of borreliosis with *Borrelia hermsii*, *Borrelia turicatae*, *Borrelia parkeri* and *Borrelia recurrentis* have been also reported from endemic foci in North, Central and South America.[6,8–11]

Borreliosis is reported rarely in travellers returning from disease-endemic countries,[4] probably because most infections are benign and most cases are probably underdiagnosed[12] sometimes as malarial treatment failures.[6]

The most frequent clinical symptoms are consistent with headaches, musculo-skeletal pain, chills, nausea and vomiting.[10] However, abdominal pain, confusion, dry cough, eye pain, diarrhea, dizziness and photophobia are also often present. Enlargement of liver and/or spleen is unusual.

Severe complications are rare and consistent with neurological involvement (meningitis, encephalitis, radiculitis, myelitis), ophtalmological involvement (optic neuritis, uveitis), cardiac involvement (myocarditis) and fetal loss or neonatal deaths.[9,12]