Fever in a Returned French Sailor
(See page 119 for the Photo Quiz)

Figure 1. Giemsa-stained blood smear showing a microgamete \(a\) 7–14 \(\mu\)m in length with a cell nucleus (dark, thickened area; \(b\)) and showing a mature trophozoite \(c\) with Schüffner’s dots \(d\) and nuclear material within the vacuole surrounded by pseudopodia of lilac cytoplasm \(e\) (original magnification, \(\times1000\)).

Diagnosis: *Plasmodium vivax* infection with microgametes.

Diagnosis relied on microscopic examination of blood smears (figures 1–3) and the results of an antigen detection test. Microgametes are dense, curved organisms containing nuclei. The estimated parasite density was 0.7%. Our patient received an oral course of chloroquine and recovered well. Blood film examination showed decreasing parasitemia on day 3 after presentation and no parasitemia on day 7. *P. vivax*, which causes a non-lethal form of malaria, is the most widespread etiological agent of human malaria. Recrudescence and relapse are classically described and are related to the presence of dormant liver parasites, called hypnozoites, that are not susceptible to prophylaxis. *Plasmodium* microgametes are produced from the gametocytes by exflagellate, which takes place in the mosquito gut cavity immediately after the blood meal [1]. They are rarely observed in human blood; to date, only a few cases have been reported, and these, interestingly, have mainly been due to *P. vivax* [2–4]. The primary factor that controls exflagellation is pH. Decreasing pH initiates exflagellation: exposition of the blood to air for several minutes provokes a decrease in the CO\(_2\) level, to equilibrate with the surrounding air, which allows exflagellation [5]. Microgametes have no clinical significance except for the possibility of misdiagnosis as *Borrelia* infection and unusual flagellated trypanosomes, spirochetes, or microfilaria, which can be associated with malaria [6]. In our case, the size and morphological characteristics of *P. vivax* allowed it to be easily distinguished from *Borrelia* species; moreover, the results of serological testing for *Borrelia* species, microfilaria, and trypanosomes were negative.

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Figure 2. Giemsa-stained blood smear showing *Plasmodium vivax* macrogametocyte with cytoplasm (a) and Schüffner’s dots (b)

Figure 3. Exflagellating forms of *Plasmodium vivax* (a) from a male gametocyte (b)

References