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MORPHOLOGICAL PICTURES OF PERIPHERAL BLOOD DURING A FULL-BLOWN MALARIA CASE

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The incidence of malaria in developed countries is usually very low, but returning staff of recent humanitarian and military missions in Africa have slightly increased this rate. In fact, exposure to the bite of infected anopheles mosquitoes, even using adequate prophylaxis, raises the infection risk, and clinical symptoms may occur before or after return to the native land.

We present some morphological details of one of these paradigmatic malaria cases with hematologic complications.

Clinical picture

A 25-year-old Portuguese man was admitted to a field hospital early one morning in the acute phase of *Plasmodium falciparum sive immaculatum* (*P. falciparum*) malaria.

He had been suffering for 2 days from vomiting, abdominal pain, macrohematuria, profuse sweating, weakness, headaches, confusion and fever with temperatures as high as 39.5 to 41°C.

Physical examination revealed pallor, progressive jaundice, slight hepatomegaly and splenomegaly (3 cm below the costal margin on admission, 15 cm twelve hours later).

Laboratory findings

Diagnosis was confirmed by parasite identification on thin and thick blood smears. Moreover, during the first 12 hours of hospitalization a sharp drop in hemoglobin (from 13.0 to 6.8 g/dL) and platelets (from 146 to 12×10^9/L) was observed, concomitant with a considerable increase of total bilirubin (18.2 mg/dL) and creatinine (3.4 mg/dL) values.

Morphology

In this patient the acute and life-threatening phase of *P. falciparum* malaria was characterized by simple detection and identification of parasites on ordinary May-Grünwald-Giemsa-stained smears.

In particular, considerable parasitemia was found on thick smears, where young ring form trophozoites presented an evident numerical underlining (Figure 1).

On the contrary, on thin smears, it was possible to demonstrate the presence of all typical *P. falciparum* forms (Figure 2-6), except for macro- and micro-gametocytes, which are usually difficult to find in the peripheral circulation.

Treatment and outcome

Treatment was promptly started with adequate hydration, chloroquine (600 mg/day i.v.) and doxycycline (200 mg/day i.v.). In addition, the patient required transfusion of 2 red cell concentrates during the first night of hospitalization.

The patient's general condition remained critical till next morning, but from this moment on it improved quickly, together with laboratory findings.

On discharge, 2 days after admission, the patient was still slightly feverish and jaundiced, while spleen size was drastically reduced. He continued therapy with chloroquine alone (600 mg/day orally), and was completely recovered in less than 2 weeks.

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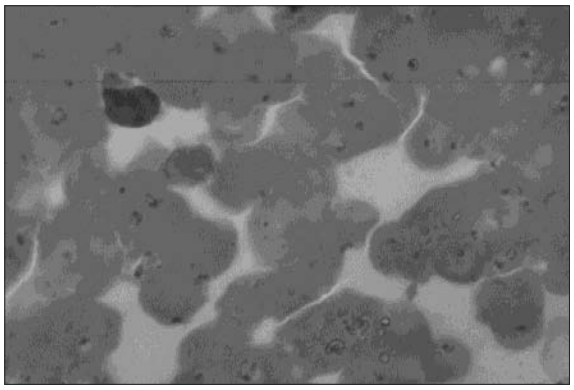

Figure 1. Thick smear: very numerous young ring form trophozoites (MGG×1000).

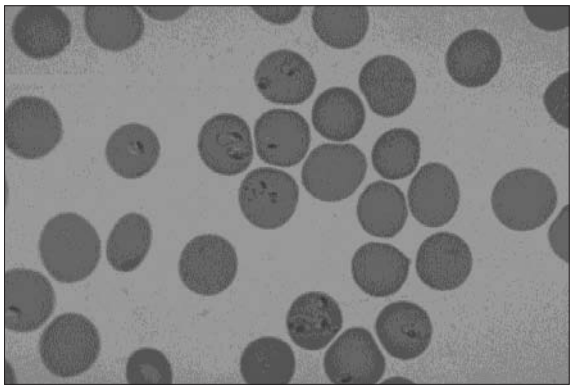

Figure 2. Thin smear: single and multiple infections of single cells. One very young and three mature trophozoites in one cell containing Maurer spots (MGG×1000).

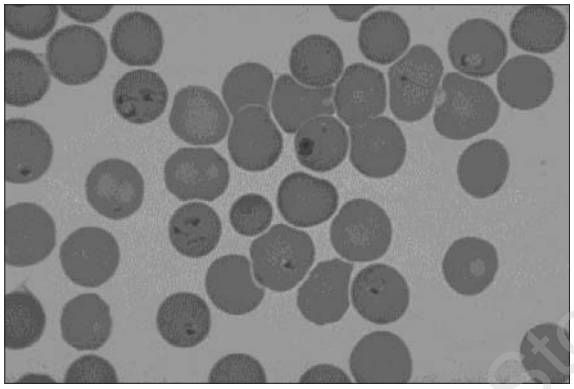

Figure 3. Thin smear: mature trophozoites, showing clumped pigment, in one cell (MGG×1000).

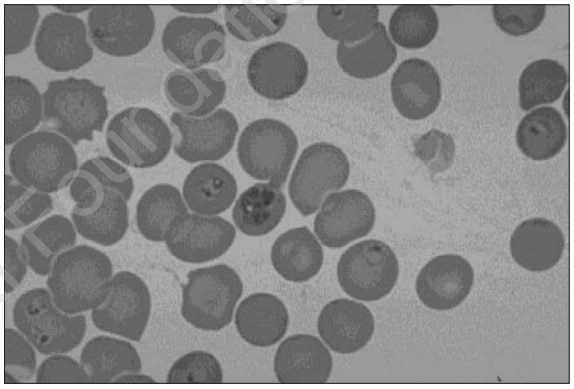

Figure 4. Thin smear: parasite in the process of initial chromatin division in one cell (MGG×1000).

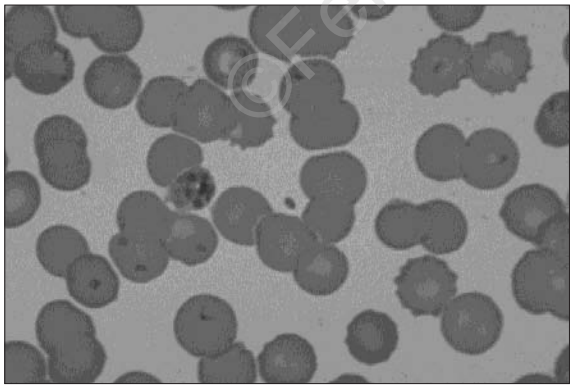

Figure 5. Thin smear: presegmenting schizont, containing eight merozoites, in one cell (MGG×1000).

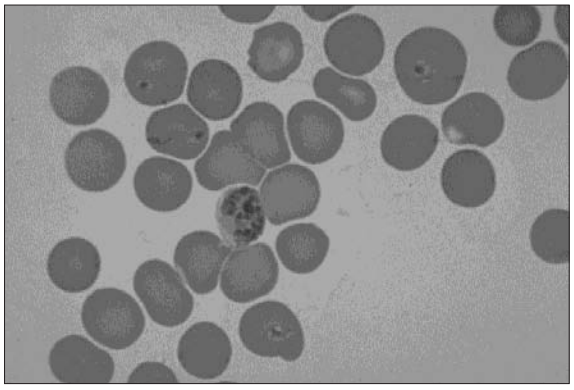

Figure 6. Thin smear: mature schizont in one cell (MGG×1000).