A Homeless Man with Maculopapular Rash Who Died in Marseille, France
(See page 1412 for Photo Quiz)

Figure 1. A, Maculopapular erythema on the trunk. B, Eschar at the site of a tick bite on the right shoulder.

Diagnosis: Mediterranean spotted fever (MSF) in its malignant form.

At admission to the infectious and tropical diseases department at one of our institutions (Hôpital Nord, Marseille, France), physical examination revealed, in addition to the maculopapular rash and the eschar on the right shoulder (figure 1), several tiny black spots. Careful examination showed that these spots were actually ticks (a total of 22) attached on the skin. They were immediately removed from the patient’s skin (on the legs, groin, arms, and axilla). The patient had spent a total of 25 h in the emergency department, during which time he was examined by a medical student, a resident, and the attending physician; blood samples were drawn by a nurse; and he was directly supported by 3 people during performance of a spinal tap. Dermatologic examination was woefully incomplete, as often occurs when unhygienic, homeless, and/or drunken patients present to emergency units. All ticks were identified as *Rhipicephalus sanguineus*, the brown dog tick, including 1 female and nymphs (figure 2). Because MSF in its malignant form was suspected, empirical treatment with doxycycline and ciprofloxacin was started immediately. Six days after the patient’s death, blood culture for *Rickettsiae* (shell-vial cell culture) became positive for *Rickettsia conorii*, the agent of MSF. The biopsy sample of the eschar (“tache noire”) (figure 1B) was positive for the same rickettsia by culture as well as by molecular methods. After autopsy, *R. conorii* DNA was amplified from a specimen of the spleen. Two of the 22 ticks tested positive for rickettsia, including 1 for *R. conorii* and 1 for *Rickettsia* Bar29 (a rickettsia of unknown pathogenicity, also associated with *R. sanguineus*) by molecular methods and shell-vial cell culture.

MSF due to *R. conorii* is endemic in the Mediterranean area, where it is transmitted by the brown dog tick, *R. sanguineus*. This tick is highly host-specific and rarely bites humans in France [1, 2]. As a result, despite the fact that these ticks live in the environment of dogs (i.e., close to humans), cases of MSF are sporadic and the incidence is relatively low.

The case presented here is highly unusual in regard to the intensity of parasitism by *R. sanguineus*. It is the first time that we have observed >1 *R. sanguineus* feeding on a human body [1]. August 2003 was the hottest summer in the past 50 years in France. An exceptional number of days (>17) had a temperature of ≥35°C recorded in southern France [3]. In these conditions, the biological cycle of the ticks might have changed, as well as their host-seeking and feeding behaviors [4, 5, 6].

The onset of MSF is abrupt and typical cases present with high fever, flulike symptoms, a black eschar (tache noire) at the tick bite site, and a maculopapular rash (figure 1) [7].
Although MSF is often considered a benign disease, severe forms may occur including major neurological manifestations and multiorgan involvement [8]. The mortality rate of MSF is usually estimated to be ~2.5%, but a recent report has found a mortality rate of 32.3% among hospitalized patients in Portugal [10]. Classic risk factors for severe forms include advanced age, immunocompromise, chronic alcoholism and glucose-6-phosphate-dehydrogenase deficiency, prior prescription of an inappropriate antibiotic, or delay of treatment [9, 11]. Fatal outcome has also been associated with diabetes, vomiting, dehydration, and uremia [10]. As in the case we describe, thrombocytopenia, abnormal hepatic function, and hyponatremia are common findings in severe MSF [7, 10]. Other frequent abnormal findings include elevated adenosine deaminase and triglyceride levels and abnormal urinalysis findings [7]. Treatment of MSF should never be delayed, and first-line therapy is doxycycline [2].

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References

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Figure 2. A, Rhipicephalus sanguineus female attached to the skin. B, Rhipicephalus sanguineus nymphs near the axilla.