AUTOCHTHONOUS EPIDEMIC TYPHUS ASSOCIATED WITH BARTONELLA
QUINTANA BACTEREMIA IN A HOMELESS PERSON

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Abstract. Trench fever, a louse-borne disease caused by Bartonella quintana, is reemerging in homeless persons. Epidemic typhus is another life-threatening louse-borne disease caused by Rickettsia prowazekii and known to occur in conditions of war, famine, refugee camps, cold weather, poverty, or lapses in public health. We report the first case of seroconversion to R. prowazekii in a homeless person of Marseilles, France. This was associated with B. quintana bacteremia. Although no outbreaks of typhus have been notified yet in the homeless population, this disease is likely to reemerge in such situations.

INTRODUCTION

Epidemic typhus is a disease caused by Rickettsia prowazekii and transmitted by the body louse, Pediculus humanus corporis. The main reservoir is humans. It is a life-threatening, acute exanthematic febrile illness. The mortality rate varies from 2% to 40% for untreated cases. In self-resolving cases, the bacteria can persist for life in human, and under stressful conditions, recrudescence may occur as a milder Brill-Zinsser disease.¹ Because this clinical form is bacteremic, it can initiate an outbreak of epidemic typhus when body louse infestations are prevalent in the population. Outbreaks of epidemic typhus have always been associated with war, famine, refugee camps, cold weather, poverty, or lapses in public health. Such conditions would lead to domestic crowding and reduced personal hygiene that facilitates body lice infestation,¹ as were encountered in Burundi and Russia where recent outbreaks of epidemic typhus have been reported.²,³ In developed countries, similar poor living conditions predisposing to high prevalence of body lice infestation exist in homeless populations.⁴ Bartonella quintana, another louse-borne disease, is endemic in the homeless of large cities, but no case of R. prowazekii infection has been reported to date in this population.⁵ We report a case of seroconversion to R. prowazekii that occurred in a homeless man and apparently acquired in Marseilles, France, that highlights the threat for this population.

CASE REPORT

A 60-year-old alcoholic homeless man was hospitalized in October 2002 in Marseilles, France, for evaluation of foot problems. During the past year, he shared his life between a hotel room and a homeless shelter and was admitted several times at the hospital for acute alcoholism. The presence of body lice was recorded at these occasions. On admission, he had a temperature of 37.5°C, a blood pressure of 120/60 mm of Hg, a pulse rate of 72 per minute, and red edematous and painful skin lesions of the feet and lower extremities of his legs associated with cutaneous superinfection. A painful hepatomegaly was noticed. There was no rash. The rest of the physical examination was normal. No lice were found on his clothes at this time. Laboratory findings showed increased serum C-reactive protein (39 mg/L) and erythrocyte sedimentation rate (105 mm/first hour). The rest of biochemical and hematological investigation including white blood cells count, platelets count, hemoglobin level, and aminotransferases level was normal. After local therapy using topical antibiotics and saline compresses, conditions of his lower extremities improved. As we followed this population exposed to louse-borne diseases since 1995, we systematically performed on admission blood culture for B. quintana and serological testing of other louse-associated infections. The blood culture recovered B. quintana and the immunofluorescence assay (IFA) was positive for R. prowazekii (IgM 1/256, IgG 1/128) and for R. typhi (IgM 1/128, IgG 1/64). Cross-adsorption and Western immunoblotting confirmed that antibodies were directed against R. prowazekii (Figure 1).⁶ Serum obtained in January 2002 was tested and found negative, indicating that the patient seroconverted to R. prowazekii. Serological tests for B. quintana, HIV, hepatitis C, and hepatitis B were negative. The patient was subsequently questioned about his condition during this period. He did not remember suffering fever or rash and did not receive treatment including tetracycline during the past year. Serum samples subsequently collected in the follow-up showed a progressive decrease of R. prowazekii antibodies to disappearance of IgM with an IgG residual titer of 1:64 in February 2003.

DISCUSSION

Louse transmits three bacterial diseases. Epidemic typhus due to R. prowazekii, relapsing fever due to Borrelia recurrentis, and trench fever due to Bartonella quintana.⁹ Although B. quintana infection has largely been reported in the homeless populations, epidemic typhus and louse-borne relapsing fever have not yet been reported in the homeless of developed countries.⁹ The results of the serologic tests using IFA, cross-adsorption, and Western blot and the sequences of antibodies titers indicate that this patient seroconverted for R. prowazekii, the agent of epidemic typhus, in the 10 previous months preceding his hospitalization. Association of these three serological tests was reported to be the best tool for serological diagnosis of R. prowazekii infection.⁶ The detection of B. quintana in the blood also suggests recent transmission of this microorganism and therefore a recent contact with infected body lice.¹⁰ In a recent study among homeless living in Marseilles’ shelters, we demonstrate that significant antibody titers to R. prowazekii were present in 0.75% of
Moreover, in Marseilles, a sporadic case of imported typhus from Algeria in a homeless patient and cases of the recurrent bacteremic form of typhus, Brill-Zinsser disease, have recently been reported. In our experience, 30% to 50% of the homeless in shelters have lice, and the introduction of such bacteremic patients in the homeless shelters raised the possibility of an emerging outbreak of epidemic typhus. Although no outbreak of epidemic typhus was noted yet among the homeless population of Marseilles, this report shows that epidemic typhus may occur. Clinical presentation in this patient was probably mild with absence of the rash and may have a self resolution. Studies of reported outbreaks of epidemic typhus indicated that rash was found in about 20% to 50% of cases and self-resolution is found in more than 60% of cases. This report emphasized the importance of delousing the homeless population to avoid life-threatening louse-borne infections.

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REFERENCES