An HIV-Positive Patient with Cervical Lymphadenopathy and Skin Lesions
(See page 849 for the Photo Quiz)

Figure 1. Left cervical adenomegaly (A) and a pedunculated nodular erythematous lesion on the left thigh (B, C) caused by bacillary angiomatosis in an HIV-positive patient.

Diagnosis: Bacillary angiomatosis

Histological examination of the lymph node and skin biopsy specimen revealed vascular proliferation and dark-staining, rod-like bacilli, strongly suggestive of bacillary angiomatosis (figure 2). Bartonella henselae and Bartonella quintana are the causative agents of bacillary angiomatosis, bacillary peliosis, and cat-scratch disease [1, 2]. These organisms are extremely fastidious, tiny, gram-negative bacilli that grow with difficulty in culture. Bacillary angiomatosis is an infectious disease that causes small blood vessels to proliferate in the skin and in visceral organs in immunocompromised patients. Both B. henselae and B. quintana are involved in skin- or deep tissue-associated disease. Hepatic peliosis and lymph node involvement is associated with B. henselae infection [1, 3].

Flea-infested cats are epidemiologically linked with transmission of B. henselae [4], whereas B. quintana infection is epidemiologically associated with poor hygiene and homelessness (transmission is associated with the bite of the human body louse) [5–7].

The agent is often observed in tissue sections of lesions with Warthin-Starry staining [8]. Other methods of identification include blood culture (lysis centrifugation), PCR amplification, and serological assays [1]. Erythromycin or tetracyclines remain the treatment of choice [9]. Clarithromycin or azithromycin are second-line alternatives. The penicillins and first-generation cephalosporins have no in vitro activity. Quinolones have variable in vitro activity and clinical response in case reports; they are considered to be second-line drugs. Patients should continue to receive therapy for at least 3 months. For those who experience failure of treatment with the first-line drugs, treatment with ≥1 second-line drug is recommended. Those patients who experience relapse should receive therapy for life.

The disease occurs most often in the late stages of human immunodeficiency virus (HIV) infection. The lack of specific signs in patients with bacillary angiomatosis makes the diagnosis difficult. Bartonella infection can be the cause of fever of unknown origin in HIV-infected patients with disseminated forms of the disease. However, because of the difficulty of culturing the organism and the unspecific clinical presentation, the diagnosis is often neglected. Koehler et al. [10] found an 18% prevalence of infection due to Bartonella species among patients with unexplained fever and late-stage HIV infection.
Our patient lived in the suburbs and had exposure to cats and kittens. The adenopathies and skin lesions, with no other evidence of organ involvement, favor *B. henselae* as the causative agent in this case. The patient was treated with oral doxycycline (100 mg administered twice per day) for 4 weeks and experienced resolution of the skin lesions. Because of persistent fever and tender cervical nodes, doxycycline was switched to oral ciprofloxacin (500 mg administered twice per day) and clarithromycin (500 mg administered twice per day) in addition to HAART. After 3 weeks of therapy, the patient recovered.

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**Figure 2.** Skin biopsy specimen showing dark-staining, rod-like bacilli (arrows) (Warthin-Starry stain, original magnification, ×400).