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Case Report

HIV and Bartonella henselae Coinfection in a Pediatric Patient: A Case Report

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Abstract

Bartonella henselae is a small gram negative bacillus that causes prolonged bacteremia in cats. Transmission to humans typically occurs via inoculation from a cat scratch or bite. The course of clinical disease from *B. henselae* is heavily influenced by infected individuals` immune system status. Immunocompromised hosts have the potential to develop pathologic vasoproliferation associated with abundant collections of organisms, described as bacillary angiomatosis. These patients most commonly present with skin lesions, fever, and weight loss that can become a life-threatening long-term systemic infection. Bacillary angiomatosis in HIV infected patients is a rare disease, and exact global prevalence is not known. We report a case of bacillary angiomatosis in a 13 year-old boy, recently diagnosed with HIV infection.

Keywords: Bacillary angiomatosis; Bartonella; HIV child

Case Presentation

A male 13-year-old boy was admitted to the hospital for investigation of a 5 Kg weight loss complaint in the last year. On admission, he presented fever, mild hepatomegaly, an enlarged axillary lymph node of 3 cm on the right arm and a raised soft-tissue mass lesion on the same arm that was 4 x 4 cm. He reported a previous cat scratch on the right arm, where he also had a scar, occurring about 3 months ago. The patient's personal medical history was unremarkable, with no record of previous hospitalizations and no use of regular medications. His mother had a long history of drug abuse and a diagnosis of HIV-infection a few years earlier. The boy had not been tested previously for HIV infection.

HIV infection was confirmed during the hospitalization by positive serology (ELISA). Initial exams showed an HIV viral load of 209,529 copies/mL, CD4+T-cell count of 8 cells/µl, and CD8+T-cell of 183 cells/µl. Antiretroviral therapy (ART) was initiated as soon as HIV disease was diagnosed. He was started on efavirenz, lamivudine, and abacavir, together with azithromycin and sulfamethoxazole + trimethoprim as prophylaxis for *Mycobacterium avium* Complex disease and *Pneumocystis jirovecii* pneumonia.

On the second day of hospitalization, he was submitted to the right axillary lymph node biopsy. Tuberculosis investigation was carried out by bacilloscopy and Polimerase Chain reaction (PCR) presenting negative results. The search for neoplastic cells in the material was also negative. The histological exam of the lymph node showed an intense proliferation of ectatic capillary vessels of the angiomatoid aspect, acute inflammatory infiltrate predominantly composed of granulocytes, neutrophils, lymphocytes, and plasma cells. The histological picture was compatible with the diagnosis of atypical vascular proliferation suggesting the diagnosis of bacillary angiomatosis (BA). Serological investigation of *Bartonella* was also performed and presented positive *Bartonella* IgG antibody titers (1:128).

The diagnosis of BA was considered, and the skin injury which had initially been considered as a Kaposi Sarcoma was also attributed to *Bartonella* infection. An abdominal ultrasound confirmed the hepatosplenomegaly and showed reactive hepatic hilum lymph nodes. Transthoracic cardiac echography and contrasted CT-scanning of the brain were performed to exclude dissemination to these organs. Both presented no evidence of infection.

The patient was started on doxycycline and was discharged after 8 days on treatment, presenting partial regression of the lymph node and skin lesion. We was referred to the infectious disease clinic in use of doxiciclin for 12 weeks.

Discussion

Bartonella henselae is a small, fastidious, aerobic, intracellular, gram-negative bacillus that causes prolonged bacteremia in cats, the major natural reservoir of this organism. Transmission to humans typically occurs via inoculation from a cat scratch or bite [1]. The estimated annual incidence of *Bartonella* in the United States ranges from 4.5 to 9.3 100,000 [2].

Bartonella henselae infection presents in a variety of forms, such as lymphadenitis, fever, headache, or splenomegaly [1,4]. The most common presentation in immunocompetent hosts is a self-limited fever and regional lymphadenopathy known as cat-scratch disease [5]. In most cases, a single-node is involved, with generalized aching, malaise, anorexia, and, rarely, nausea and abdominal pain. The course of clinical disease from *B. henselae* is heavily influenced by infected individuals immune system status. In individuals who are immunocompromised long-term systemic infections are frequent and can become life-threatening [6]. These patients most commonly present with skin lesions, fever, and weight loss, but other organs can be involved, including bone, liver, spleen, lymph nodes, and central nervous system [7].

Immunocompromised hosts, additionally, have the potential to develop pathologic vasoproliferation associated with abundant

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collections of organisms, described histologically as bacillary peliosis (BP) or Bacillary Angiomatosis (BA). BP lesions are found in the liver and spleen, whereas BA may be either cutaneous or visceral [8]. BA has become more frequently recognized in solid organ transplant (SOT) recipients and reports in HIV infected patients remain rare [9].

Bacillary angiomatosis as a disease clinical finding in HIV infected patients is a relatively rare occurrence, and exact global prevalence is not known. Plettenberg et al identified 21 cases of bacillary angiomatosis in HIV adults in Germany, resulting in a frequency of 1.2 cases per 1,000 HIV patients [10]. A study conducted in Brazil, came to a similar result with 1.42 cases per 1,000 HIV patients older than 20 years [11-15]. Considering specifically the pediatric population, the association of HIV and bacillary angiomatosis had been previously described in 2 patients aged 10 and 12 years, in Malawi and Tanzania. Both presented cutaneous manifestations of the disease and favorable outcome after therapy [16,17].

HIV infected patients have different symptoms compared to the general population, making the diagnosis a challenge. Lesions have been associated with nearly every organ system, but cutaneous lesions are the most common sign identified. These skin lesions can be clinically indistinguishable from Kaposi sarcoma, pyogenic granuloma, and other skin conditions, and include violaceous papules, nodules and, tumors as we could observe in our patient [8,17]. Gasquet et al reviewed the clinical manifestations in 37 immunocompromised patients, demonstrating that skin lesions were the main manifestation (83.7%), followed by fever (62.1%) and weight loss (35.1%) [12]. The involvement of other organs includes the bone, liver, spleen, lymph nodes, and central nervous system. Lymphadenopathy had not been reported previously as a manifestation of bacillary angiomatosis in an HIV child [16,17]. In this case, the involvement of the heart and central nervous system were excluded by imaging exams. The hepatosplenomegaly with reactive hepatic hilum lymph nodes observed in this case could be associated to *Bartonella* or HIV infection. Although isolated organs can appear to be the principal focus of the disease, bacillary angiomatosis represents a systemic infection. Therefore, systemic symptoms as fever, night sweats, and weight loss often accompany disease manifestations [8].

Bacillary angiomatosis most often occurs late in HIV infection, in patients with median CD4 T lymphocyte (CD4 cell) counts <50 cells/mm [8]. In this case report, the patient had a CD4+ count of 8 cells/µl at diagnosis.

The differential diagnosis of *Bartonella* infection is broad [13]. It includes toxoplasmosis, tularemia, Kikuchi disease, fungal infection, mycobacterial infection, and malignant entities including lymphoproliferative disorders. Clinical features of many of these entities overlap, and relatively non- specific histologic features may make them challenging to distinguish histopathologically [13]. Diagnosis can be confirmed by histopathologic examination of biopsied tissue. Bacillary angiomatosis is characterized by vascular proliferation, and modified silver stain usually demonstrates numerous bacilli [8]. A mixed inflammatory infiltrates including lymphocytes and neutrophils, with leukocytosis, and areas of focal necrosis are often present [14]. In this patient, lymph node biopsy demonstrated a similar presentation to the description above; however, the modified silver stain was not performed.

In immunocompetent patients, anti-*Bartonella* antibodies might not be detectable for 6 weeks after acute infection, in contrast, by the time Bartonella infection is suspected in patients with late-stage HIV infection, they usually have been infected for months. Note that as many as 25% of *Bartonella* patients never develop antibodies in the setting of advanced HIV infection.

Although there is no consensus treatment for Bacillary angiomatosis, clinicians experienced in treating this condition recommend therapy with oral erythromycin or doxiciclin for 8 to 12 weeks to avoid relapses [8,15] Our patient was treated showing good response after one week on antibiotic. Relapses of BA lesions in bone and skin have been reported frequently and occur when antibiotics are given for a shorter duration (<3 months), especially in severely immunocompromised HIV-infected patients.

Conclusion

Bacillary angiomatosis is a rare disease in HIV pediatric patients that is substantially underrecognized due to the nonspecific symptomatology, making the diagnosis a challenge. The infection should be considered in the differential diagnosis of HIV patients with fever, skin lesions and lymphadenopathy, especially when CD4 T cell counts are under 100 cell/mm3 [8]. In these patients, long-term systemic infections are frequent and can become life-threatening. A favourable outcome can be observed when the disease is correctly diagnosed, and treatment is provided. For our better understanding of the disease, more research on bartonellosis in pediatric HIV population are needed.

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