International Journal of Integrative Pediatrics and Environmental Medicine, V5, 2020, 17-19

Case Report

PEDIATRIC *BARTONELLA* INFECTION (CAT SCRATCH DISEASE) PRESENTING AS INGUINAL LYMPHADENOPATHY

Ganesh Maniam[1*], Aisha Khan[1], Raphael Mattamal[1]

Author information: *1. Department of Pediatrics Texas Tech University Health Sciences Center at Amarillo, 1400 S Coulter St, Amarillo, TX, USA, 79106*

Abstract: Cat scratch disease is an infectious disease resulting from inoculation of *Bartonella* species through a cat scratch or bite, often presenting as an erythematous papule at the site of inoculation with nearby painful lymphadenopathy. A history of cat exposure is an important environmental risk factor that raises the clinical suspicion for this disease. The diagnosis of this disease is complicated by a wide variety of clinical presentations, as the primary lesion may not be initially noticed. Furthermore, cervical and axillary lymph nodes are the most commonly involved regions of tender lymphadenopathy, but this case discusses pediatric *Bartonella henselae* infection that initially presented as left inguinal lymphadenopathy with underlying necrosis and abscess formation. In this case, a 9-year-old boy presented to the ED with a 4-day history of an enlarging mass in the left groin, as well as a subjective fever for the previous 2 days. An ultrasound revealed a necrotic abscess in the left inguinal lymph node which necessitated empiric antibiotic therapy and surgical excision. Titers revealed a recent infection with *Bartonella henselae*. Atypical presentations of cat scratch disease, such as inguinal lymphadenopathy, have historically confounded the diagnosis. However, positive serology studies ultimately yielded the correct diagnoses in these children. Given that cat scratch disease can present in an atypical fashion in approximately 5-25% of cases, physicians should keep the disease on the differential, even when presented with rare presentations such as inguinal lymphadenopathy. Serological testing for *B. henselae* can be utilized, once more likely etiologies have been ruled out.

Keywords: Cat scratch disease, lymphadenopathy, pediatrics, abscess, serologic tests

INTRODUCTION Cat scratch disease is an infectious disease resulting from inoculation of *Bartonella* species through a cat scratch or bite, often presenting as an erythematous papule at the site of inoculation with nearby painful lymphadenopathy [1]. Cat exposure is an environmental risk factor that should warrant clinical suspicion for this disease. The causative agent cannot be easily cultured from wound or lymph node samples, necessitating diagnoses based on clinical and serological information [2]. The diagnosis of this disease is complicated by a wide variety of clinical presentations, as the primary granulomatous skin lesion may not be initially noticed. Furthermore, cervical and axillary lymph nodes are the most commonly involved regions for the tender lymphadenopathy [3], but there have been reported cases that do not fit the typical clinical picture. Such is the case discussed in this report of a pediatric *Bartonella henselae* infection that initially presented as left inguinal lymphadenopathy with underlying necrosis and abscess formation.

CASE PRESENTATION A 9-year-old boy presented to the ED with a 4-day history of an enlarging mass in the left groin, as well as a subjective fever for the previous 2 days. Physical exam revealed pain and tenderness in the area, as well as a fever of 102.9° F. An ultrasound, performed in the ED, demonstrated a necrotic abscess in the left inguinal lymph node. Urinalysis was unremarkable, but lab studies revealed elevated C-reactive protein (46.59 mg/L) suggesting an inflammatory process despite a normal white blood cell count. Following a dose of vancomycin

*Corresponding author: Ganesh Maniam
1400 S. Coulter St., Amarillo, TX, USA, 79106
e-mail: Ganesh.Maniam@ttuhsc.edu

and piperacillin/tazobactam in the ED, the patient was admitted for surgical excision and biopsy of the lymph node. The patient was started on IV clindamycin, IV fluids, and oral acetaminophen following surgery. An infectious disease workup found no organisms on gram stain of the wound, anaerobic culture, wound culture, fungal culture, acid-fast bacteria, or smear with culture. A chest x-ray on post-operative-day (POD) 3 and a skin tuberculosis test were negative for tuberculosis. A *Bartonella* species panel was ordered. *B. quintana* was negative for both immunoglobulin (Ig) M and IgG. The *B. henselae* component was positive for both IgM (1:400) and IgG (1:2560). Patient was afebrile by POD2, reported no pain by POD3, and was discharged on POD4 with oral clindamycin.

DISCUSSION The infectious etiology of cat scratch disease is the *Bartonella* species, most commonly *B. henselae* [2]. The bacteria itself is a gram-negative bacillus that colonizes cats [3], but is notoriously difficult to culture [2]. Hence, clinicians must often rely on the clinical presentation of the disease. It classically presents in children as a granulomatous skin lesion at the site of inoculation along with painful regional lymphadenopathy, but the higher than expected incidence of atypical presentations often complicates diagnosis and likely results in underdiagnosis of the disease [4]. Therefore, serological tools are often required to make the diagnosis in cases of atypical disease presentations. In this case, the inguinal lymphadenopathy with underlying necrosis and abscess formation is one such uncommon presentation.

A 2001 case report described two cases of atypical *B. henselae* disease presentation, one of which was a 64-year-old male presenting with right inguinal lymphadenopathy with subjective fever for one month [5]. His serological testing was positive for *B. henselae* (IgG titers of 1:1024) and a polymerase chain reaction (PCR) of the biopsied lymph node was likewise positive. His fever resolved with cefazolin therapy, but erythromycin was later added into the regimen for residual lymphadenopathy until resolution [5]. A similar case report in 2008 described a 35-year-old male presenting with a similar case presentation that included a one-month history of a painless right inguinal mass that had worsened in the past two weeks, as well as a subjective fever [3]. Due to concerns for malignancy, the mass was excised but was found to be histopathologically unremarkable other than nonspecific granulomatous changes [3]. It was only upon serological testing that *B. henselae* antibodies were found to be positive (1:320) [3]. However, like most cases of cat scratch disease, the illness had spontaneously resolved with supportive care only [3].

The frequency of atypical presentations of cat scratch disease, such as inguinal lymphadenopathy, has historically confounded the diagnosis. However, a case series in 2000 demonstrated that the increased utilization of serodiagnostics, including PCR and antibody titers, has increased the spectrum of recognized *B. henselae* infections [4]. The case series included three pediatric patients with inguinal lymphadenitis, an 11-year-old female, an 11-year-old male, and a 7-year-old female [4]. These patients were suspected to have more severe diagnoses, including Burkitt lymphoma and acute encephalopathy [4]. However, positive serology studies ultimately yielded the correct diagnoses in these children, and all recovered from their infections without any serious complications [4].

While cat scratch disease is common at approximately 0.60 - 0.86 cases per 100,000 [6], the patient in this case had an unusual initial presentation of painful inguinal lymphadenopathy that was found to have developed a necrotic abscess on ultrasound. The treatment was surgical excision with biopsy, followed by a course of antibiotics. Given that cat scratch disease can present in an atypical fashion in approximately 5–25% of cases [4], physicians should keep the disease on the differential even when presented with exceedingly rare presentations such as inguinal lymphadenopathy. Serological testing for *B. henselae* can be utilized after likely etiologies have been ruled out.

DISCLOSURES: No animal or human studies were carried out by the authors for this manuscript.

REFERENCES

1. Chang CC, Lee CJ, Ou LS, *et al.* Disseminated cat-scratch disease: case report and review of the literature. *Klin Padiatr* 2010; 222(2):73-8.
2. Hansmann Y, DeMartino S, Piemont Y, *et al.* Diagnosis of cat scratch disease with detection of *Bartonella henselae* by PCR: A Study of Patients with Lymph Node Enlargement. *J Clin Microbiol* 2005; 43(8): 3800–6.
3. Mancino P, Ucciferri C, Falasca K, *et al.* Inguinal lymphadenopathy due to *Bartonella henselae*. *Infez Med* 2008; 2: 91–3.

4. Massei F, Messina F, Talini I, *et al.* Widening of the clinical spectrum of *Bartonella henselae* infection as recognized through serodiagnostics. *Eur J Pediatr* 2000; 159: 416-9.
5. Murano I, Tsuneoka H, Iino H, *et al*. Two patients with *Bartonella henselae* infection from a dog. *Kansenshogaku Zasshi* 2001; 75: 808-11.
6. Nelson CA, Saha S, Mead PS. Cat-scratch disease in the United States, 2005–2013. *Emerg Infect Dis* 2016; 22: 1741–6.