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“The Cat’s Out of the Bag: A Delayed Diagnosis of *B. henselae*”

Introduction: Cat Scratch Disease (CSD) is an infection caused by the bacteria *B. henselae* or *B. quintana*, which are intracellular gram-negative bacilli. CSD usually presents with fever and regional lymphadenopathy but can sometimes progress to a disseminated infection. It is underrecognized in adult patients as the majority of cases occur in children. The reservoir of CSD is cats who have been infected with the bacterium by fleas, which serve as the vector. Humans contract CSD when they are bitten or scratched by infected cats.

Case: A 24-year-old previously healthy Honduran man presented to the ER with a six-week history of worsening left arm pain and underlying axillary lymphadenopathy. He had been empirically treated for presumptive sinopulmonary infection with multiple courses of antibiotics including amoxicillin-clavulanate and doxycycline through outpatient urgent care providers without improvement. On presentation, he complained of left arm pain and swelling that limited range of motion at the shoulder joint. He also complained of neuropathic pain, numbness, tingling, and weakness in the left arm. The initial differential diagnosis was most notable for bacterial abscess, bacterial lymphadenitis, tuberculous lymphadenitis, and lymphoma. Additional obtainment of a more detailed history revealed that the patient was bitten on the left index finger by his cat 3 months prior to symptom onset. While CSD is more common in young children, the history of a cat bite combined with the patient’s localized lymphadenopathy led to strong consideration of CSD as a likely diagnosis. CT with contrast obtained on admission confirmed the presence of a 4.4 x 2.8 cm mass in the left axilla. QuantiFERON Gold, HIV testing, and blood cultures were negative. Fine needle aspiration of the lymph node was performed, and cytology was negative for malignant cells. Aspirate Gram stain, fungal stain, and AFB smear were negative. Subsequent aspirate cultures were without growth. Although *Bartonella* PCR was negative, serologic testing for was positive *Bartonella* (elevated IgM and IgG), confirming a diagnosis of CSD in this clinical scenario. Initially the patient was treated empirically with vancomycin, piperacillin-tazobactam, and azithromycin for bacterial lymphadenitis including coverage of possible CSD. His pain and lymphadenopathy did not significantly improve with an initial 5-day azithromycin course. He was subsequently treated with a second 5-day course of high-dose azithromycin and underwent therapeutic aspiration of fluid surrounding the lymph node. These interventions along with aggressive pain control led to significant improvement in his pain. He was ultimately discharged after an 11-day admission.

Discussion: This case highlights the importance of obtaining a comprehensive history and maintaining a wide differential in undifferentiated patients until a clear diagnosis is established. This case also supports the importance of considering *Bartonella* in patients with localized and painful lymphadenopathy regardless of age. *Bartonella* diagnosis can be achieved by serology, PCR, histopathology, or Warthin-Starry staining. A positive *Bartonella* PCR is diagnostic, but a negative test should not rule out CSD as false negatives are common based on limited specimen cellularity of fine needle aspiration. Positive *Bartonella* serology can strongly support

a diagnosis of CSD but can also indicate previously resolved infection. Applying serologic testing results to an individual clinical scenario is essential in making an accurate diagnosis.