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CLINICAL VIGNETTE

Left Neck Lymphadenopathy in a Young Woman

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Case Report

A 23-year-old female with no significant past medical history presents for an urgent visit to her primary care doctor concerning a lump on her neck that she noticed 2 days prior. She noted a small “mosquito bite” and found an “itchy lump” adjacent to the “bite”, which she had not noted before. She is otherwise healthy and denies dysphagia, odynophagia, fever or respiratory symptoms. She does not smoke, drink or use IV drugs. On physical exam, her vitals are within normal limits and exam of her left lower neck reveals a soft 1 cm non-tender mobile mass. She had no palpable axillary, supraclavicular or right neck lymphadenopathy. Lab testing included normal CBC and TSH. An ultrasound performed nine days later showed an enlarged, morphologically abnormal lymph node measuring 10 x 14 mm. Subsequent CT scan revealed an “ovoid mass adjacent/within the inferior aspect of the left sternocleidomastoid, likely to be left level 4 lymphadenopathy with no evidence of central necrosis as well as additional scattered lymph nodes including left supraclavicular lymph nodes.” Due to concern for possible lymphoma, she was seen by ENT and underwent FNA which revealed no evidence for malignancy. Flow cytometry was also negative and she was started on empiric clindamycin and scheduled for excision if the mass persisted. Sixteen days after her initial visit, the lymph node was excised and sent for bacterial, fungal, and acid-fast stains. All returned negative. She was also questioned about cat exposure and revealed she was working as a veterinary technician in a small animal practice. Serology for *Bartonella Henselae* IgG returned positive and the patient was offered additional treatment with doxycycline, but declined as her symptoms had resolved. She returned for follow up two months later with complete resolution of the lymphadenopathy.

Discussion

Our patient presented with localized left neck lymphadenopathy. The differential diagnoses of lymphadenopathy include infection, malignancy, autoimmune disease, and medication reactions.¹ Important additional history includes duration, associated symptoms, existing or suspected malignancy, as well as potential exposure from travel, environmental, and animal exposures.¹ Infection is commonly associated with enlarged neck lymph nodes, including TB, HIV, EBV, influenza, or bacterial sources of pharyngitis.¹ Concerns about malignancy are always in the differential, even in young patients without known malignancy or systemic symptoms. However, of patients presenting to primary care providers with unexplained

lymphadenopathy, only 1.1% were related to malignancy, with risk increasing with age.^{1,2} Lymphoma is a particularly concerning cause of lymphadenopathy, and often presents with a chronic, painless, non-mobile enlarged lymph node.³ Our patient presented two days after she noticed the mass, but it may have remained undetected until she developed adjacent pruritis. As such, while lymphoma was considered, it was lower on the differential, due to her acute presentation, young age, immunocompetence, lack of B-symptoms (fever, night sweats, and weight loss), as well as the small size of her lymph node.^{1,3,4} This was further confirmed with negative FNA and flow cytometry. Autoimmune diseases, such as systemic lupus erythematosus, commonly present in young women, but tend to be associated with constitutional symptoms, such as fever and fatigue, skin conditions, myalgia, and arthralgia. Patients with sarcoidosis can present with enlarged peripheral lymph nodes, particularly with bilateral hilar lymphadenopathy, and biopsy would reveal non-caseating granulomas with giant cells.

After she underwent lymph node biopsy, additional exposure history revealed prior cat scratches working as a veterinary technician at a small animal practice. This prompted serologic testing for cat scratch disease, which established the diagnosis.

Bartonella henselae is a zoonotic infection that commonly causes cat scratch disease, with characteristic fever, malaise, and regional lymphadenopathy. About 12,000 patients are diagnosed with cat scratch disease annually in the United States, with reported incidence ranging from 4.5 to 9.3 per 100,000.^{5,6} The incidence peaks in the fall and winter seasons, and is most commonly seen in the Pacific and southern regions of the United States.⁵ Cats remain the principal mammal reservoir species for *Bartonella henselae*, but exposure to dogs and fleas has been implicated in the transmission of disease as well.^{7,8} The bacteria is mainly spread to humans through either bites or scratches in the skin, or through exposed mucosal membranes.⁹ While diagnoses are highest amongst children, studies have shown occurrence of the disease in the adult population.^{5,6} Our young adult patient worked as a veterinarian technician, with a high level of exposure to cats through her work. One study found that 7.1% of veterinary professionals were seropositive for *Bartonella henselae* or *Bartonella Quintana*.¹⁰ Individuals typically develop a papule at the inoculation site about 3-10 days after contact with the bacteria, usually lasting 1-3 weeks.¹¹ Notably, *Bartonella henselae* presentation is characterized by regional lymphadenopathy proximal to the inoculation site,

usually occurring 1-3 weeks after inoculation, which can be associated with fever and persist for several months.¹¹

Clinically healthy patients with localized symptoms tend to have a self-resolving course, but if the disease disseminates, complications can occur.¹² Infection can manifest in the skin as erythema nodosum, or as bacillary angiomatosis with characteristic erythematous papular lesions that bleed profusely when traumatized.^{12,13} One of the more common sites of inflammation is the eye, as Parinaud's oculoglandular syndrome, with conjunctivitis and preauricular lymphadenitis. One study found that 88% of patients with cat scratch disease and ocular symptoms had swollen optic discs.^{14,15} There have also been cases of encephalopathy, seizures, as well as neuroretinitis with associated decrease in visual acuity.¹⁴⁻¹⁶ Liver infection can result in inflammation and hepatic peliosis with hepatomegaly from blood-filled cavities within the liver parenchyma. Patients can also present with culture-negative endocarditis with severe cardiac valvular lesions, particularly in patients with prior valvular surgery.¹⁷ These complications are more common in immunocompromised individuals, such as those with HIV or who have undergone solid organ transplantation.^{5,9,18}

Diagnosis is often clinical, especially if the patient has had contact with a potentially infected animal, but can be confirmed with positive serologic testing, which is now widely available at reference labs.^{6,9} Due to lack of systematic reviews of treatment, *Bartonella henselae* infection is often treated on a case-by-case basis.¹⁹ Empiric treatment with antibiotics is often administered, particularly to shorten the duration of symptoms and prevent progression of the disease to other organ systems.^{6,19} Systemic infection often requires prolonged treatment with a combination of antibiotics, and patients will likely benefit from consultation with an infectious disease specialist.^{17,20} For example, Bartonella endocarditis is often a delayed diagnosis and can have a high mortality rate.¹⁷ Given the increased risk, aminoglycosides are also recommended due to bacteriocidal properties.^{19,21,22} Erythromycin is the recommended antibiotic treatment for bacillary angiomatosis and hepatic peliosis.^{19,21,23}

In general, conservative treatment is recommended for patients with mild-to-moderate cat scratch disease.^{9,11} Our patient presented with localized infection without fever, and underwent a comprehensive evaluation for lymphadenopathy. Specific serologic testing was delayed until initial testing returned negative and specific history of substantial cat exposure was obtained. Her symptoms resolved within two months of presentation. Although she received empirical clindamycin briefly, she likely had spontaneous resolution.

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