A Case of Cat-scratch Disease

A 10-year-old girl had been deaf since she was born and received an implanted electrical hearing aid that functioned poorly. She had suffered from fever, poor appetite, cough, sore throat, and headache for 3 days. She was brought to a local clinic twice, but her febrile condition continued for another 4 days. Therefore, she was admitted to our pediatric inpatient unit for further evaluation and treatment. At admission, the body temperature of the patient was 38.8°C, and physical examination revealed a congested throat with a pus-like coating. We also noted an elastic, smooth-surfaced, immovable but slightly tender, nonerythematous mass of 3 cm × 2 cm over the left anterior neck near the sternocleidomastoid muscle (Figure 1A). Her breath sounds were coarsely audible. The chest radiograph film showed increased infiltrates over the bilateral lung fields. The results for white blood cell count were 4240 cells/high-power field, with 73% neutrophils and 2.4% eosinophils; aspartate aminotransferase 21 U/L and alanine aminotransferase 17 U/L; C-reactive protein (CRP) 0.92 mg/dL (normal < 0.5 mg/dL); and urinalysis was normal.

Our patient did not have any contact with a contagious disease or travel history. After receiving empirical antibiotic therapy with oxacillin, her fever remained unimproved for three more days. In rechecking the laboratory data, we found that CRP had increased to 3.07 mg/dL, and other routine blood tests were normal. The Epstein–Barr virus (EBV) profile revealed the possibility of EBV infection due to high EBV viral capsid antigen immunoglobulin G (IgG) titer. On the Day 5 of hospitalization, after our history taking, the patient's mother told us that they had raised a kitten. We did not detect any scratched scars over the upper and lower extremities, but noticed two scratch lesions on the chest; one 1 cm × 1 cm slightly reddish papule with a smooth edge, and a healed papule of 0.5 cm × 0.5 cm (Figure 1B). These valuable findings reminded us of cat-scratch disease (CSD), therefore, we sent a blood sample to the Center for Disease Control (CDC) for Bartonella immunofluorescence assays and prescribed erythromycin. Her fever subsided on the next day, and the neck mass decreased to 3 cm × 1.5 cm and became less tender. She was discharged on Day 9 of hospitalization. The neck mass disappeared completely when she came back to the outpatient clinic for follow-up 1 month after discharge.

The first blood sample was reported to be undetermined by the CDC. The second sample collected 2 weeks later showed a positive result for indirect immunofluorescence assay (IFA)-immunoglobulin M (IgM), but undetermined for indirect IFA-IgG. We did not isolate any pathogen by microbiological culture. The CDC confirmed the diagnosis as CSD. The true incidence of CSD is unknown. Carithers’ published the first comprehensive review of global literature on CSD, which described the spectrum of the disease. In Taiwan, the first case of CSD was reported in 1998.2 There were 12 confirmed cases in 2006, and 15–30 cases were diagnosed annually (http://www.cdc.gov.tw). Domestic cats are the major reservoir for Bartonella henselae. The epidemiological data do not support the transmission of B. henselae from cats to humans via fleas. More than 90% of victims of CSD mention recent close contact with cats, especial kittens. Kittens are more likely to scratch and carry active infection than older cats are. History taking is important for diagnosis of CSD.3,4 When we take care of a communication-handicapped child, more and detailed illness history should be confirmed by his or her caregiver. CSD can be asymptomatic or symptomatic. One or more papules appear on cat-scratched sites 7–12 days after scratching. These lesions last for 1–4 weeks and then regress, and finally lymphadenitis appears.2 Lymphadenitis mostly involves the nodes that drain the site of the scratch. The most common sites are the axilla followed by cervical, submandibular, and inguinal regions. The lymphadenitis in the present case appeared in the cervical area after the patient was inoculated over the anterior chest. Many patients are afebrile and lack systemic symptoms. Symptomatic patients may develop regional lymphadenopathy, fever, and other symptoms such as fatigue, anorexia, and headache. Systemic illness occurs in a small proportion of cases, such as prolonged fever, myalgia, skin rash, abdominal pain, hepatosplenomegaly, encephalitis, aseptic meningitis, neuroretinitis, osteolytic lesions, hepatitis, pneumonia, purpura, bone marrow granuloma, and erythema nodosum.5

The routine laboratory examination findings for CSD are not apparent, and mostly comprise elevated CRP and erythrocyte sedimentation rate.1 Elevated liver enzymes occur if the liver is involved. Computed tomography and ultrasound may be helpful in the diagnosis of some disseminated cases. The enzyme immunoassay has high specificity 98%,5,6 Serological tests such as IgM and IgG IFA assays, show reliable sensitivity of 88% and specificity of 98%.5,6 Polymerase chain reaction assays are the most sensitive methods of diagnosing Bartonella infection.7 To isolate Bartonella species is not helpful because of the long incubation period (2–4 weeks). Lymph node biopsy is not indicated for most cases, but it is necessary in patients whose lymph nodes fail to resolve and the diagnosis is uncertain. Histological findings of lymph nodes are characteristic, with lymphocyte infiltration and epitheloid granuloma formation. Our case was confirmed by a positive IFA-IgM test.

The treatment of CSD depends on the disease presentation and is mainly supportive care. The disease is self-limited and regresses slowly in 2–4 months, and does not require antibiotics. A total of 14% of patients develop systemic involvement in the liver, spleen, eyes, or central nervous system. Antibiotics may help, although mild or uncomplicated disease may not require antibiotics. B.
henselae is susceptible to many antibiotics, including penicillins, tetracyclines, macrolides, trimethoprim–sulfamethoxazole, rifampin, fluoroquinolones, and aminoglycosides. The application of azithromycin for 5 days to treat CSD can reduce lymph node size and relieve symptoms. The systemic symptoms of our case were improved mostly after we prescribed erythromycin for 5 days and no lymph node mass was palpable 1 month later. Surgery is unnecessary.

In conclusion, the prognosis of CSD is excellent. Cats have become important and intimate members of small families in modern society. The prevention of CSD includes cleaning the wounds of cat scratches and bites routinely as soon as possible, and not allowing cats to lick open wounds, and controlling fleas routinely.

References


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