Cat-Scratch Disease Associated With Erythema Nodosum

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Before 1983 physicians diagnosed cat-scratch disease by its clinical manifestations and a positive Hanger-Rose skin test. Three out of four criteria, as outlined by Warwick,[1] were required for diagnosis. In 1983 Wear, et al.[2] reported that they found gram-negative pleomorphic organisms using the Warthin-Starry stain on lymph nodes from patients with cat-scratch disease. The organism was then isolated by culture in 1986.[3]

Occasionally, cat-scratch disease can cause atypical manifestations that make the diagnosis difficult. Furthermore, the Hanger-Rose skin test has a 5 percent false-positive and a 5 percent false-negative rate.[1] Atypical manifestations include encephalitis, osteomyelitis, the Parinaud oculoglandular syndrome, and various nonspecific skin manifestations.[1] With the new diagnostic techniques, the disease is being redefined. We report a patient who had erythema nodosum as a presenting manifestation of cat-scratch disease. Our case is the first example of this association proved by Warthin-Starry stain and by culture.

Case Report

A 20-year-old woman came to the office complaining of fever and malaise. She reported having been scratched by a kitten on her left index finger 3 weeks earlier. Two days later, a painless swelling developed in her left axilla. One day before entry to the hospital, she developed fever, chills, painful joints, and a rash. The joint pain was acute in onset and nonmigratory and involved the metatarsophalangeal joints of both great toes and the third and fifth metacarpophalangeal joints of the left hand. Her medical history was noncontributory. The only medication she had taken was an unknown antibiotic for the fever.

The patient was a thin woman in no distress aside from the above complaints. Her temperature was 103.9°F (39.9°C), pulse 116 beats per minute, and blood pressure 112/60 mmHg. A 4- × 3-cm nontender, firm, mobile swelling was palpable in the left axilla. Tenderness, erythema, and swelling were present over the left third and fifth metacarpophalangeal joints, the left wrist, and both first metatarsophalangeal joints. Violaceous, tender, slightly raised nodules were noted on the anterior aspects of both lower legs. Tender, diffuse erythema measuring 4 × 3 cm was evident on the dorsum of the right foot. Findings from the rest of her examination were unremarkable.

Laboratory studies disclosed the following values: white cell count 14.6 × 10^9/L (14,600 mm^3), with 0.55 neutrophils, 0.9 band forms, 0.27 lymphocytes, and 0.9 monocytes. Her hemoglobin was 122 g/L (12.2 g/dL), platelet count 183 × 10^9/L (183 × 10/mm^3), and Westergren erythrocyte sedimentation rate 89 mm/h. Skin tests for tuberculosis and *Candida* were both negative at 48 hours. Serum evaluations for antinuclear antibody, rheumatoid factor, and hepatitis B were all negative, as were urine and blood cultures. Findings on radiographs of the chest and joints were normal. The enlarged left axillary node was excised and sent to the Armed Forces Institute of Pathology in Washington, DC. Histopathological studies showed necrotizing granulomas compatible with cat-scratch disease. Special stains for mycobacteria and fungi were negative; however, the Warthin-Starry stain showed rare, single-filament, silver-stained bacilli in two granulomas. The tissue was then frozen, ground, and placed in brain and heart infusion biphasic bottles, where it was incubated at 32°C. Branching vegetative forms of bacilli were grown, and these were identified as cat-scratch bacilli.

The patient was treated with naproxen, acetaminophen, and bed rest. Her fever, rash, and swollen joints resolved over a 5-day hospital stay, and she was ambulatory at the time of discharge. She did not return for follow-up.

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Discussion

Dermatologic manifestations occur in 4 to 5 percent of patients with cat-scratch disease, including petechial rashes with thrombocytopenia, morbilliform and maculopapular rashes, erythema multiforme, and erythema nodosum.[4]

Erythema nodosum is a nonspecific hypersensitivity reaction in the skin. It is a syndrome characterized by painful, tender, cutaneous nodules that most frequently occur on the extensor aspects of the lower legs. Although the diagnosis is usually made on clinical grounds, supportive, but not conclusive, evidence can come from a skin biopsy revealing a panniculitis.

Erythema nodosum occurs in response to a wide range of microbial and nonmicrobial antigens. In our patient, a reaction to the cat-scratch bacillus was thought to be the most likely cause. Of the four clinical criteria cited to make the diagnosis of cat-scratch disease, three were present. Penicillin and sulfonamides are the most frequently implicated antibiotics causing erythema nodosum; however, the patient was unable to identify her previous medications. Her history and physical examination at presentation did not suggest sarcoidosis, *Yersinia* infection, or a deep-seated fungal infection. Apart from the work-up already outlined, these other diagnoses were not pursued further.

Warwick,[1] in his classic 1967 review of the world literature on cat-scratch disease, suggested that physicians were relying too much on the Rose-Hanger test and paying inadequate attention to clinical criteria. Twenty references appear in his bibliography associating erythema nodosum with cat-scratch disease. Some of the patients he identified in the world literature with erythema nodosum, however, may not have had cat-scratch disease; therefore, there may have been overreporting.[1]

An additional 14 cases of erythema nodosum associated with cat-scratch disease have been reported in the English literature since 1967.[4-6] In two large studies that we collectively reviewed, erythema nodosum occurred in approximately 0.6 percent of cases.[4,5] In Margileth's[4] recent review on dermatologic manifestations of cat-scratch disease, he described one case of erythema nodosum and listed seven others. It is unclear whether any of these cases of cat-scratch disease were confirmed by the Warthin-Starry stain.

Previously, the diagnosis of cat-scratch disease was one of exclusion in atypical cases. The case we have presented, diagnosed by Warthin-Starry stain and by culture of the organism, confirms the association of cat-scratch disease and erythema nodosum.

References

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