Cat Scratch Disease Presenting as Orbital Abscess and Osteomyelitis

Beloo Mirakhur,1 Samir S. Shah,1,2* Adam J. Ratner,2 Scott M. Goldstein,3,4 Louis M. Bell,1,2 and Jean O. Kim2

Divisions of General Pediatrics1 and Infectious Diseases,2 and Department of Ophthalmology,3 The Children’s Hospital of Philadelphia, and Scheie Eye Institute,4 Philadelphia, Pennsylvania

Received 12 November 2002/Returned for modification 17 March 2003/Accepted 1 May 2003

Ocular manifestations of cat scratch disease are uncommon. The diagnosis is usually made on the basis of increasing Bartonella henselae serum antibody titers. We report a child presenting with orbital abscess and osteomyelitis who was diagnosed with hepatosplenic cat scratch disease by detection of B. henselae DNA in the orbital abscess fluid.

CASE REPORT

A 3-year-old girl presented with a fever of up to 40.0°C and worsening right eyelid edema, erythema, and tenderness. Shortly after the onset of symptoms, she was evaluated by her pediatrician and diagnosed with periocular cellulitis. She was treated with amoxicillin-clavulanate. Despite oral antibiotics, her symptoms worsened over a 3-week period and she was taken to a nearby hospital. Computed tomographic (CT) imaging of her head revealed a 2-cm mass in the extracranial space of the lateral orbit with adjacent lytic bony changes (Fig. 1). She was transported to The Children’s Hospital of Philadelphia for further management. Her history was significant for multiple scratches to her face and body from a recently acquired kitten. Her past medical history was otherwise unremarkable.

On arrival, her examination revealed proptosis of the right eye with significant periorbital edema, erythema, and tenderness. There was no pain with extraocular movements, but right-side gaze was limited. The right eye conjunctiva was mildly injected. The fundi were normal. There was no lymphadenopathy or hepatosplenic abnormalities. The remainder of her physical examination was unremarkable.

Laboratory analyses revealed the following: white blood cell count, 13,100/mm³ (68% segmented neutrophils, 21% lymphocytes, and 7% monocytes); platelets, 560,000/mm³; hemoglobin, 10.8 g/dl. CT of the chest and abdomen, performed to exclude metastatic malignancy, revealed retroperitoneal lymphadenopathy and numerous hypodense liver and spleen lesions (Fig. 2). Bartonella henselae immunoglobulin M (IgM) was 1:20 (reference range, <1:20), and B. henselae IgG was 1:64 (reference range, ≤1:32). The erythrocyte sedimentation rate (ESR) was 105 mm/h, and the C-reactive protein (CRP) level was 5.43 mg/dl.

The lateral orbital mass was drained of purulent fluid. There were no other collections. No organisms were seen on Gram stain. Culture of the aspirated material was negative for aerobic and anaerobic bacteria, acid-fast bacilli, and fungi. Postoperative magnetic resonance imaging of the orbit showed post-terolateral irregularity of the bone consistent with orbital osteomyelitis. Preoperatively, she was treated with ampicillin-sulbactam. Postoperatively, when specimens of the aspirated fluid were positive for B. henselae by PCR (Centers for Disease Control and Prevention, Atlanta, Ga.), she also received rifampin. Her fever resolved on the seventh day of hospitalization. The ESR and CRP level were 50 mm/h and 1.0 mg/dl, respectively, 3 weeks after drainage and were normal 5 weeks later. The patient completed a 5-week course of ampicillin-sulbactam plus rifampin.

Discussion. The differential diagnosis of an orbital mass with bone destruction includes rhabdomyosarcoma, neuroblastoma, histiocytosis, and infection. Lymphoma and leukemia can cause an orbital mass but rarely cause the bony destruction present in this case. Ocular manifestations of cat scratch disease may include Parinaud oculoglandular syndrome and neu- roretinitis (3, 4). Other ocular manifestations are rare. Gaebler et al. reported a 4-year-old child with subacute orbital abscess in whom the diagnosis of cat scratch disease was made on the basis of serum antibody titers (5). Goldstein et al. diagnosed cat scratch endophthalmitis by PCR in a 45-year-old man presenting with vitreitis (6). Our case represents another atypical ocular manifestation of cat scratch disease. The diagnosis was confirmed when B. henselae DNA was identified in the orbital abscess fluid by PCR. The history of contact with kittens, positive serology for B. henselae, and associated hepatosplenic lesions supported the diagnosis.

Serologic testing for antibodies to B. henselae is the most widely used test for laboratory confirmation of the diagnosis of cat scratch disease. Since the seroprevalence of B. henselae antibodies is 30% in asymptomatic cat owners, the presence of antibodies is not sufficient to make the diagnosis of cat scratch disease, particularly with atypical manifestations (13). The use of a PCR-based assay allows detection of B. henselae-specific DNA sequences (12). The increasing use of PCR-based assays for B. henselae will allow us to fully understand the scope of clinical disease associated with this organism.

The role of antimicrobial therapy in cat scratch disease with ocular involvement is unclear. The combination of rifampin...
FIG. 1. Head CT demonstrating the right lateral orbital mass (white arrows) and adjacent osteomyelitis (black arrow).

FIG. 2. Abdominal CT demonstrating several hypodense splenic lesions (arrows).
and doxycycline shortened the course of neuroretinitis due to cat scratch disease and hastened the recovery of vision in seven adults (10). Patients with osteomyelitis attributed to cat scratch disease have been successfully treated with erythromycin, azithromycin, rifampin, tetracycline, and gentamicin either alone or in combination (7, 9, 11). In a retrospective review of patients with systemic symptoms related to cat scratch disease, Margileth concluded that rifampin, ciprofloxacin, trimethoprim-sulfamethoxazole, and gentamicin were all potentially effective (8). In one case series, 16 of 19 children with hepatosplenic cat scratch disease had favorable clinical responses to rifampin alone or in combination with gentamicin (1). Patients with regional lymphadenopathy usually do not require therapy although azithromycin has been reported to decrease lymph node volume within the first month after initiation of treatment (2).

REFERENCES