Cat-Scratch Disease (Ocular Bartonellosis) Presenting as Bilateral Recurrent Iridocyclitis

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An otherwise healthy 9-year-old girl presented with bilateral recurrent anterior uveitis. Thirteen months later, the diagnosis of cat-scratch disease (ocular bartonellosis) was suspected when neuroretinitis appeared. Confirmation was based on serological test results positive for Bartonella henselae. Antibiotic treatment completely cured the disease, and there have been no further manifestations during a follow-up period of 6 years.

The causative agent of cat-scratch disease (CSD), Bartonella henselae, has ocular manifestations that are termed “ocular bartonellosis.” These manifestations include Parinaud oculoglandular syndrome and intraocular inflammation (uveitis), the latter typically adopting the form of neuroretinitis or focal retinochoroiditis [1, 2]. Anterior uveitis or iridocyclitis can accompany posterior segment inflammation [1, 3–5]. We describe a case of iridocyclitis as the initial manifestation of ocular bartonellosis; to the best of our knowledge, iridocyclitis has rarely been mentioned in this context [5–7]. This is clinically relevant, because iridocyclitis is the most common form of uveitis; therefore, CSD may need to be included in the differential diagnosis under specific circumstances.

Case report. A 9-year-old girl (weight, 38 kg) was referred to our institution (Institute of Ophthalmobiology, University of Valladolid; Valladolid, Spain) in September 1997 to initiate methotrexate therapy because of recurrent bilateral iridocyclitis possibly associated with juvenile rheumatoid arthritis. Her ocular history was remarkable for a first episode of iridocyclitis in her left eye in January 1997; this episode was cured after 20 days of topical therapy. No other preceding or accompanying ocular or systemic symptoms and signs were present. The patient received josamicine (40 mg/kg for 10 days) because of elevated antistreptolysin O titers. She had a similar, second flare-up of iridocyclitis in her right eye on 13 June 1997. At that time, a β-hemolytic streptococcus species was isolated from samples obtained from her pharynx, and she was treated with intramuscular G-benzathine penicillin and oral cefixime. Another ophthalmologist treated her with decreasing doses of deflazacort starting on 3 July 1997. On 13 August, while she was receiving deflazacort (3 mg q.d.) and was completely asymptomatic, the patient’s referring ophthalmologist diagnosed a third recurrence of anterior uveitis with normal posterior segments in both eyes. The uveitis was managed with topical therapy and deflazacort (60 mg q.d.). At her first visit to our institution, she was still receiving deflazacort (30 mg q.d.), dexamethasone (administered every hour in both eyes), and atropine (administered q8h in both eyes). Visual acuity was 20/20 in both eyes, and anterior chambers and anterior vitreous showed grade 1 inflammation. Posterior synechiae were present in the right eye. Both fundi were normal. The patient’s medical history was unremarkable. She denied having pets but admitted having frequent contact with horses.

At our institution, the patient first received a diagnosis of anterior recurrent bilateral nongranulomatous uveitis. After consultations and laboratory testing, arthropaties were ruled out on the basis of normal or negative results of tests for antinuclear antibodies, rheumatoid factor, and HLA-B27, and normal findings of joint examination. In addition, sarcoidosis, tuberculosis, toxoplasmosis, lues, herpesvirus-related disorders, Lyme disease, and brucellosis were excluded. The patient’s topical and systemic steroid dosages were slowly tapered, and she was free of inflammation after 1 month.

On 5 December 1997, the patient was referred to our institution again because of asymptomatic retinal hemorrhages in the right eye. Visual acuity was 20/20 in both eyes, and there was no intraocular inflammation in either eye. Fundus in the left eye was normal, but fundus in the right eye showed 7 preretinal and intraretinal flame-shaped hemorrhages, including 1 with a white center. Findings of a fluorescein angiogram confirmed these findings and also disclosed mild hyperfluorescence and blurred optic nerve head limits in the right eye. RBC and WBC disorders, bleeding and thrombotic disorders, and immune-mediated processes were ruled out. Hemorrhages disappeared spontaneously after 20 days. Funduscoppy revealed that the hyperfluorescent optic nerve head had developed into...
a mild papillitis. The findings of MRI of the head and orbit were normal.

On 2 February 1998, the patient developed a characteristic neuroretinitis picture in the right eye (figure 1A), with an elevated and edematous optic nerve head, dilated efferent veins, a macular star circumscribed to the nasal area, and cells with grade 1 inflammation in the anterior chamber and anterior vitreous. Visual acuity decreased slightly (20/25), and a mild relative afferent pupillary defect was present. The findings of a color vision assessment were within normal limits, and visual fields showed an increased blind spot. The left eye was normal. The patient underwent laboratory tests for causes of neuroretinitis not previously excluded. The results of serological tests for toxocara were negative, and the findings of a neurological examination ruled out multiple sclerosis. Serological testing for Lyme disease was performed again, and results showed negative IgG and slightly positive IgM titers (1:37; a positive result was defined as a titer >1:20). A Western blot test for *Borrelia burgdorferi* showed IgG titers that indicated a negative result and IgM titers that indicated an undetermined result (positive band for a 41kDa protein). Additional serological testing 30 days later showed IgG and IgM titers that indicated a negative result. Indirect immunofluorescent antibody (IFA) testing for *B. henselae* and *Bartonella quintana* disclosed negative IgM titers but positive IgG titers (1:128; a positive result was defined as a titer >1:64).

The patient was then carefully questioned about animal contacts. She confessed close contacts with cats around the sport facilities where she rode horses. This was supported by numerous scratches on her upper body. Ocular bartonellosis (or ocular CSD) was diagnosed. After obtaining blood for additional serological testing and blood cultures, treatment was started with the fixed, commercially available combination of trimethoprim-sulfamethoxazole (Septrin; Celltech Pharma) (80 mg/400 mg b.i.d.) for 6 weeks and tropicamide drops (q8h) and fluoromethalone drops (q4h) for 2 weeks. The neuroretinitis resolved 2 weeks after the patient finished the antibiotic treatment (figure 1B). Since the neuroretinitis resolved, the patient has had no further ocular problems and has remained healthy. The results of the most recent serological test, performed on 2 July 2004, showed IgM and IgG titers that were negative for *B. henselae*.

**Discussion.** To the best of our knowledge, this is the first case of neuroretinitis presenting as bilateral recurrent iridocyclitis with no extraocular manifestations of CSD. Two additional cases of unilateral iridocyclitis occurring as an ocular manifestation of CSD [5, 7] have been reported, and both occurred in patients with test results positive for HLA-B27. One patient was scratched in his left eyebrow and received a diagnosis of Parinaud ocucoglandular conjunctivitis with anterior unilateral iridocyclitis (which was later confirmed) [7]; the other patient presented with unilateral anterior iridocyclitis as the initial ocular manifestation, but no further information was provided [5]. Conversely, our patient was HLA-B27 negative and had no extraocular involvement. She had bilateral iridocyclitis that preceded the other ocular manifestations, such as macular star formation (the clue leading to diagnosis). Neuroretinitis is a nonspecific finding; in children, it can be noted in cases of bilateral papilledema, melanocytoma or hemangioma, nonspecific viral infection, and other vascular diseases. However, CSD is the causative agent in nearly two-thirds of neuroretinitis cases [8].

The diagnosis of CSD was confirmed by the positive IFA result. When EIA or IFA results that are positive for *B. henselae* according to IgG titers and/or IgM titers are used as a diagnostic tool, the overall sensitivity is 85% for EIA and 88% for IFA, and the specificity is 94%–98% for EIA and 99% for IFA [9]. Ninety-two percent of the patients with positive IgM titers detected by EIA have negative titers within 3 months after the onset of disease, and only 25% of all patients with CSD have an IgG titer positive for antibodies to *B. henselae* 1 year later [10]. Thus, *B. henselae* antibody titers can reveal the kinetics of CSD. The initial date of our patient’s contact with *B. henselae* was unknown. We first tested her 13 months after the onset of disease. Therefore, the presence of a positive IgG titer and a negative IgM titer is consistent with the known kinetics.

Although some authors have described no difference in the final visual acuity of treated patients, compared with that of untreated patients [8], one must consider that neuroretinitis due to CSD is a severe and atypical manifestation of the disease (occurring in 1%–3% of patients with CSD) [10] and that antibiotic treatment accelerates resolution of the disease [11]. Many antibiotics could have been used [12], but we selected trimethoprim-sulfamethoxazole (80 mg/400 mg) because it has good penetration into the eye and because of the age of the
patient. With this treatment, the ocular pathology resolved, and there have been no further recurrences.

Therefore, the following features confirm the diagnosis of ocular bartonellosis (CSD) in this patient: a history of close cat contact, negative results of tests for other causes of neuroretinitis and uveitis, the presence of specific IgG antibodies to *B. henselae*, the total cessation of intraocular inflammation of both eyes, and negative titers after specific antibiotic treatment. Isolation and culture of *B. henselae* or identification of *B. henselae* by PCR or nucleic acid hybridization were not ethically feasible in this case, because they would have required a diagnostic vitrectomy, which is an aggressive surgery only indicated if no other tests lead to a diagnosis.

Ocular complications are severe manifestations of CSD. Anterior recurrent bilateral uveitis as the first and only manifestation of the disease can delay the diagnosis and initiation of the appropriate treatment. Whenever cat contact is in the patient’s history, ocular bartonellosis should be suspected in patients with cases of recurrent iridocyclitis with no other apparent cause.

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**References**