Dacryoadenitis and Orbital Myositis Associated With Lyme Disease

To our knowledge, Lyme disease–associated orbital myositis has been serologically confirmed in 3 reported cases.[1-3] No cases of dacryoadenitis have been reported in association with this disease entity.

Report of a Case. A 66-year-old, previously healthy woman had a 6-day history of right periorbital edema, erythema, diplopia, pain with eye movement, tearing, nausea, and vomiting. She reported a deer tick bite on the posterior neck 2 months prior that occurred while hunting during the early summer months in northern Wisconsin. The bite was followed by 3 weeks of fever, nausea, diarrhea, weakness, arthralgias, and a diffuse rash, all of which resolved after a 10-day course of ciprofloxacin hydrochloride.

Examination revealed best-corrected visual acuities of 20/20 OD and 20/25 OS as well as no afferent pupillary defect. Intraocular pressure measured 15 mm Hg OU. There was a mild right exotropia with moderately limited right eye ductions in all fields of gaze. Binocular diplopia was reported 10° to 15° away from primary in all directions.

Moderate right periorbital edema, erythema, and upper eyelid ptosis were present (**Figure 1**). Mild right-sided proptosis was noted on Hertel exophthalmometry with measurements of 18 mm OD and 16 mm OS. Slit-lamp examination revealed mild chemosis and injection of the right conjunctiva, but the results were otherwise unremarkable. Dilated funduscopy was normal bilaterally with no evidence of optic disc edema, subretinal fluid, or posterior segment inflammation.

A noncontrast head computed tomographic scan revealed subtle lateral and medial rectus muscle and tendon enlargement with mild proptosis (**Figure 2**A). Orbital magnetic resonance imaging with gadolinium, obtained 4 days after the computed tomographic scan, revealed mild inflammatory changes within the right preseptal region with postseptal enlargement of the right lacrimal gland as well as right lateral and medial recti with tendon involvement (Figure 2B).

Given the paucity of clinical or imaging evidence of infectious orbital cellulitis, the patient began receiving oral prednisone (60 mg daily) for presumed orbital inflammation. She improved within 1 week of therapy. However, with a decrease to 50-mg daily therapy, her symptoms worsened until her dose was increased back to 60 mg daily.

Laboratory data revealed an elevated erythrocyte sedimentation rate (108 mm/h), an elevated C-reactive protein level (60 mg/L [to convert to nanomoles per liter, multiply by 9.524]), and a positive Lyme enzyme immunoassay screen (Lyme index value, 3.65; positive result is >1.21). The complete blood cell count results, thyroid-stimulating hormone level, antineutrophil cytoplasmic antibody level, and rheumatoid factor level were normal.

Based on the positive Lyme serological results, treatment with oral doxycycline (100 mg twice daily) was started for Lyme-associated orbital inflammation. The oral steroid was continued and tapered by 10 mg weekly. Within 2 weeks of starting doxycycline therapy, the patient's symptoms had largely resolved. She completed a 4-week course of doxycycline and an 8-week tapered course of prednisone with complete resolution of her symptoms.

Comment. Medline indexes only 3 cases of serologically confirmed Lyme-associated orbital myositis.[1-3] Other reported cases have lacked serological confirmation.[4,5] Additionally, a Medline search and a review of several major textbooks revealed no reported cases of dacryoadenitis secondary to *Borrelia burgdorferi* infection.

Direct spirochete muscle infiltration has been demonstrated in extraorbital muscle sites in Lyme myositis.[6] This is likely the process leading to orbital myositis. However, to date, no direct evidence of spirochetes in orbital muscle exists because biopsy in orbital myositis is not commonly performed. In atypical cases of orbital inflammation with history or features suggestive of Lyme disease, biopsy might be indicated. Additionally, the likely

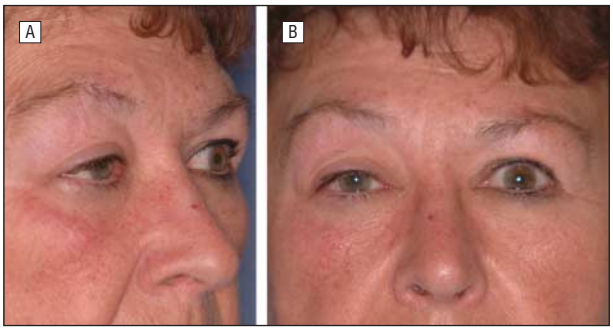

Figure 1. Periorbital edema and erythema (A) as well as ptosis (B) in a woman with serologically confirmed Lyme disease–associated orbital inflammation.

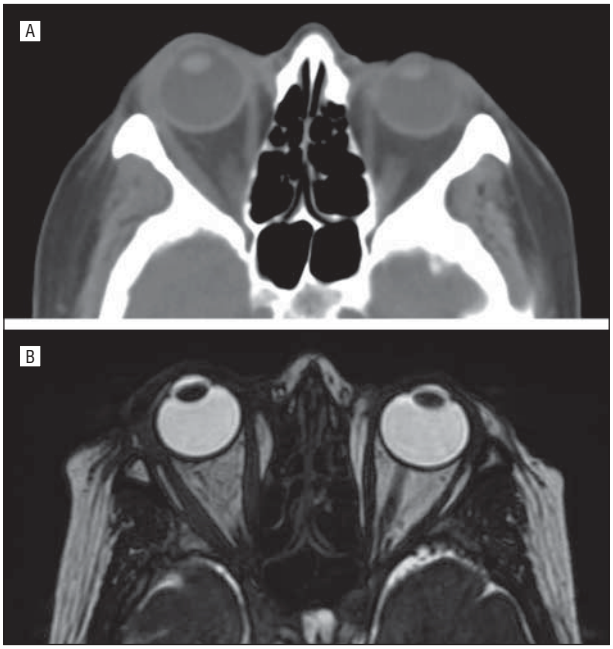

Figure 2. Images from a patient with Lyme disease–associated orbital inflammation. A, A computed tomographic scan without contrast demonstrates mild right-sided proptosis and right lateral and medial recti enlargement involving the tendon insertions. B, A T2-weighted magnetic resonance image with contrast reveals mild right-sided proptosis, mild enlargement of the right lacrimal gland, and enlarged right lateral and medial recti with tendon involvement.

presence of spirochetes in the muscle warrants antibiotic treatment. The role of steroid therapy is unclear, although such treatment might abate the inflammatory response as the *B burgdorferi* organisms are eradicated.

The mechanism for lacrimal gland inflammation apparent in our patient was unclear, and tissue biopsy would have been required to differentiate between direct infiltration and sterile inflammation.

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Black Tears (Melanodacryorrhea) From Uveal Melanoma

The ocular surface is protected by a thin, 3-layered, clear tear film. Systemic and local diseases can affect the content and color of the tear film. Bloody tears (hemolacria [Latin] or hematodacryorrhea [Greek]) are a red discoloration of the tears associated with several conditions, including epistaxis, contact lens irritation, severe anemia, coagulopathies (hemophilia), conjunctival vascular tumors, Osler-Weber-Rendu disease, nasolacrimal sac tumors, and conjunctival melanoma.[1,2] Additionally, some drugs and diagnostic dyes can change the color of bodily secretions such as tears (rifampicin and fluorescein). In this article, we describe a patient with black tears (nigrolacria [Latin] or melanodacryorrhea [Greek]) who was found to have an extensively necrotic uveal melanoma by extraocular extension (EOE).

Report of a Case. A 71-year-old white man experienced painless blurred vision of the left eye for 2 months. During the previous 2 weeks, foreign-body sensation and black tears with black mucus production were noted. He had a chest trauma a few months before.

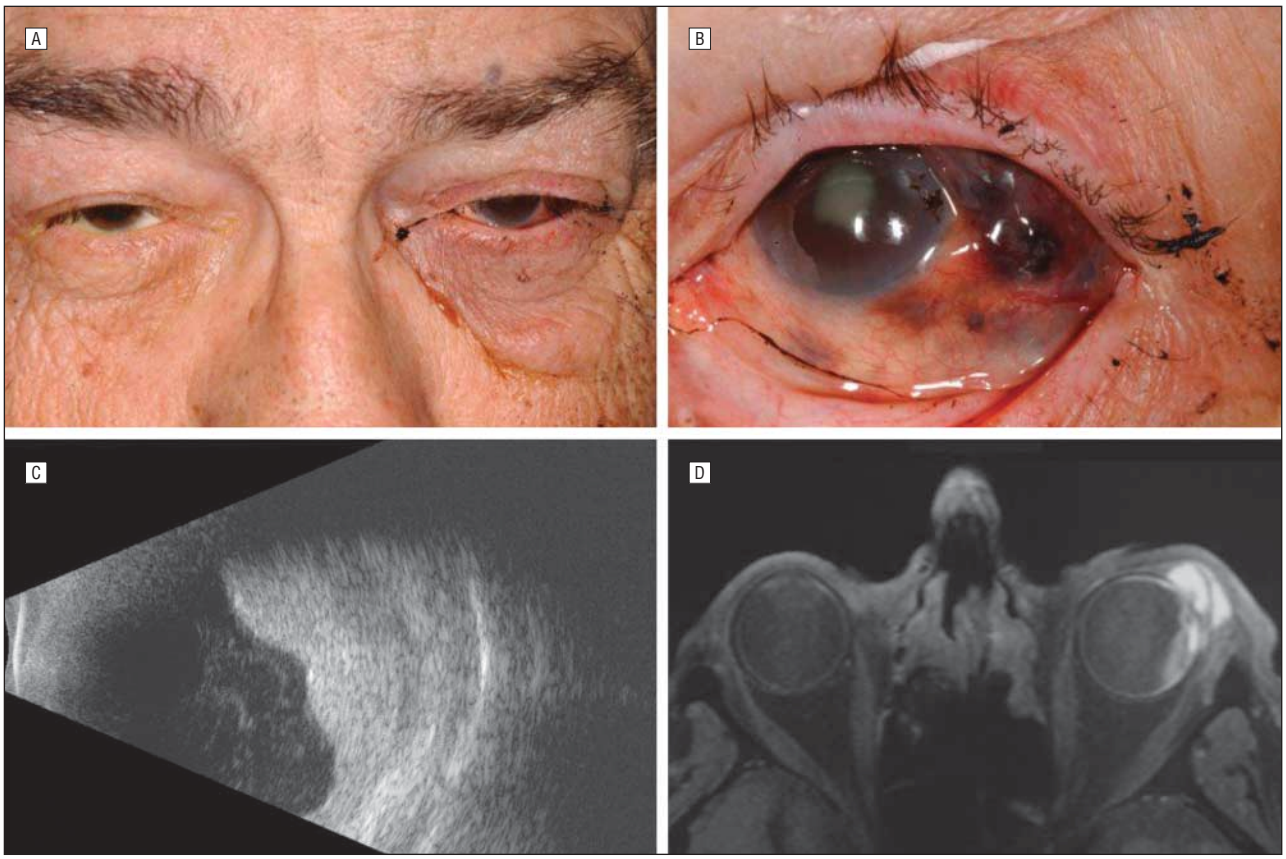

Figure 1. A 71-year-old man with black tears was found to have a necrotic, invasive uveal melanoma. A, Black, pigmented debris was noted on the left lower eyelid and cheek. B, Episcleral melanocytosis inferonasally and massive extraocular extension of the uveal melanoma temporally. Note the black mucus lining the inferior fornix and dried on the upper eyelid and cilia. C, B-scan ultrasonography showed an echodense intraocular mass with a slightly more lucent base. D, Magnetic resonance imaging revealed an intraocular mass with an epibulbar and orbital component.