Infections of the lacrimal gland are uncommon and can be divided into 2 major classes: acute suppurative dacryoadenitis and chronic dacryoadenitis. Acute suppurative dacryoadenitis is usually bacterial in origin, commonly caused by *Staphylococcus*, with *Streptococcus, Chlamydia trachomatis*, and *Neisseria gonorrhoeae* as other possible causes. Chronic dacryoadenitis is more slowly progressive and often caused by viruses, particularly the mumps virus. Other reported causes of dacryoadenitis include Epstein-Barr virus, pneumococci, diphtheria, syphilis, actinomycosis, histoplasmosis, trachoma, tuberculosis, typhoid, brucellosis, mononucleosis, measles, cytomegalovirus, coxsackievirus, echoviruses, and varicella-zoster virus. We describe an unusual case of an immunocompromised patient with dacryoadenitis caused by the herpes simplex virus (HSV).

**Herpes Simplex Virus Dacryoadenitis in an Immunocompromised Patient**

In a 29-year-old man developed acute right upper eyelid tenderness, ptosis, and edema associated with an enlarged and indurated lacrimal gland. Marked conjunctival chemosis was present and ocular motility was mildly limited. The right preauricular node was both tender and palpable. The patient’s history was significant for acquired immunodeficiency syndrome, intolerant to highly active antiretroviral therapy. He was not taking antiretroviral therapy at the time of examination. He had previously been treated for syphilis and herpes zoster localized to the back and left lower extremity. His temperature was 37.5°C. Visual acuity was 20/40 OD and 20/20 OS. Ophthalmoscopy showed cotton-wool spots and dot-blot hemorrhages consistent with mild, bilateral retinopathy caused by human immunodeficiency virus. Orbital computed tomographic scan was notable for bilaterally enlarged lacrimal glands and diffuse right preseptal soft-tissue swelling (*Figure 2*).

Routine bacterial and fungal blood cultures were negative, as were routine bacterial and fungal conjunctival cultures. Because of allergies to penicillin and sulfa drugs, the patient was started on a regimen of clindamycin and ciprofloxacin hydrochloride. During the next 10 days, his condition worsened and the right orbital inflammation increased. A diagnostic right lacrimal gland biopsy was performed.

At surgery, the gland appeared indurated, without evidence of abscess. Cultures were obtained. Aerobic, anaerobic, acid-fast bacterial, and fungal cultures were negative. Interestingly, the conventional tube culture, derived from grinding the tis-

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Figure 3. The lacrimal gland architecture is markedly distorted by a mixed neutrophilic, lymphocytic, and histiocytic infiltrate. Epithelial cells contain nuclear inclusions typical of herpes simplex infection (arrows) (hematoxylin-eosin, original magnification ×200).

Figure 4. Immunohistochemical studies demonstrate a strong nuclear positivity for herpes simplex virus. Because of the targeted epitope, distinction between herpes simplex viruses 1 and 2 is not possible by this method (herpes simplex virus immunohistochemistry stain, avidin-biotin complex method, original magnification ×400).

... sue obtained by biopsy and culturing on cell lines, was positive for adenovirus but negative for cytomegalovirus, HSV, varicella-zoster virus, and enterovirus. Histologic sections of the lacrimal gland biopsy specimen documented the presence of a necrotizing dacryoadenitis, with a dense infiltrate composed of neutrophils; histiocytes; small, cytologically bland lymphocytes; and lesser numbers of plasma cells and eosinophils. This infiltrate was associated with extensive glandular destruction (Figure 3). The viral cytopathic change typical of adenovirus infection—amphophilic inclusions with peripheral clearing or “smudge cells”—was not identified. Immunoperoxidase studies performed on paraffin-embedded material with standard methods and commercially available antibodies (HSV-1 and -2, DAKO Corp, Carpinteria, Calif, polyclonal product ID B0114, 1:250; cytomegalovirus, DAKO Corp, clone DDG9 and CCH2 cocktail, 1:25; adenovirus, Research Diagnostics Inc, Flanders, NJ, clone M58 and M73 cocktail, 1:50) were positive for HSV (Figure 4) and negative for cytomegalovirus and adenovirus. Flow cytometric analysis of the lymphoid component identified a dominant population of reactive CD3+ T cells, with negligible numbers of reactive CD19+ B cells. When taken together, the morphologic finding of inclusions, the positive immunostain results, and the negative lymphoma workup (flow cytometry) all supported the diagnosis of herpetic dacryoadenitis.

Given the diagnosis of HSV dacryoadenitis, the patient started treatment with acyclovir (10 mg/kg administered intravenously every 8 hours). He responded within 5 days and was discharged from the hospital on a regimen of erythromycin ophthalmic ointment and famciclovir, 500 mg by mouth 3 times a day. He made an uneventful recovery with the exception of bilateral mild dry eye symptoms. The patient was lost to follow-up before a posttreatment Schirmer test could be performed.

Comment. The discordant pathology immunophenotypic results and culture results may relate to 1 of 2 possibilities. First, immunostains do not have 100% sensitivity, and the patient’s dacryoadenitis may be due to both HSV and adenovirus infection. The absence of viral inclusions and pathologic changes characteristic of adenovirus would make this possibility unlikely. Second, the patient may have had active necrotizing dacryoadenitis caused by HSV, with cultures positive for adenovirus because of latent adenovirus harbored in lacrimal gland tissue. We favor this latter possibility, because the pathologic evaluation failed to disclose evidence of direct tissue damage caused by adenovirus and the patient responded to acyclovir therapy. In addition, a review of the literature shows that the rate of false-negative culture results for HSV, when compared with polymerase chain reaction, ranges from 57% to 78%. Finally, ocular swabs and nasopharyngeal swabs 3 months after admission, performed by the patient’s internal medicine physician after the patient’s ophthalmic findings had resolved, were positive for adenovirus.

This case illustrates the possibility that herpesviruses can cause dacryoadenitis without corneal involvement and that HSV is a potential pathogen for immunocompromised patients with dacryoadenitis. It is unclear whether the lacrimal gland was the primary site of infection, since there was a coexisting conjunctival reaction. It is possible that the gland became secondarily infected from a primary herpetic conjunctivitis. Zarrabi reported 2 cases of dacryoadenitis in nonimmunocompromised patients with corneal dendrites. While these patients may have had HSV dacryoadenitis, confirmatory cultures and biopsies were not performed.

Empirical antiviral therapy should be considered in patients with atypical dacryoadenitis. Lacrimal gland biopsy and immunoperoxidase staining are helpful in confirming the cause of this condition.

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ARCHIVES Web Quiz Winner

Congratulations to the winner of our January quiz, Praphulla Hebbalalu, MD, Interfaith Medical Center, Brooklyn, NY. The correct answer to our January challenge was granular corneal dystrophy. For a complete discussion of this case, see the Clinicopathologic Reports, Case Reports, and Small Case Series section in the February ARCHIVES (Mathew B, Brownstein S, Bao W, Klintworth GK, Singh D. Unusual superficial variant of granular corneal dystrophy with amyloid deposition. Arch Ophthalmol. 2003;121:269-271).

Be sure to visit the Archives of Ophthalmology Web site (http://www.archophthalmol.com) and try your hand at our Clinical Challenge Interactive Quiz. We invite visitors to make a diagnosis based on selected information from a case report or other feature scheduled to be published in the following month’s print edition of the ARCHIVES. The first visitor to e-mail our Web editors with the correct answer will be recognized in the print journal and on our Web site and will also be able to choose one of the following books published by AMA Press: Clinical Eye Atlas, Clinical Retina, or Users’ Guides to the Medical Literature.