Mycobacterium Fortuitum as a Cause for Nasolacrimal Obstruction and Granulomatous Eyelid Disease

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ABSTRACT

A case of dacyrocystitis due to Mycobacterium fortuitum is reported with secondary chronic granulomatous abscess of the eyelid. Mycobacterium fortuitum is an atypical Mycobacterium rarely encountered in ophthalmic practice. The clinical course of the abscess caused by Mycobacterium is reviewed and the successful management of this problem by cryotherapy discussed.

A typical mycobacteria are being recognized with increasing frequency as a cause of granulomatous abscess of the skin. However, aside from the occasional case of corneal ulcer caused by Mycobacterium fortuitum, little mention regarding this organism is found in the ophthalmic literature. Because Mycobacterium fortuitum is often resistant to all antituberculous drugs, medical treatment is usually not successful. The following is a description of a case of Mycobacterium fortuitum abscess involving the nasolacrimal system and the lower eyelid.

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CASE REPORT

A 61-year-old white female presented with a three-month history of epiphora LE. She had undergone numerous probings and irrigations of the left nasolacrimal system without relief. Three weeks prior to admission, she noticed tender swelling of the left lower lid. This was treated with warm compresses. She was eventually admitted to an outlying hospital for one day with a diagnosis of acute dacryocystitis and then transferred to the Scheie Eye Institute.

Past medical history was significant for a mitral valve replacement in 1954 and a duodenal ulcer one year prior to admission.

General physical examination was unremarkable except for a soft systolic murmur and heart clicks secondary to the mitral valve.

Ophthalmologic examination revealed a visual acuity of 6/7.5 RE and 6/9 LE. Intraocular tension was 17 mm RE but was deferred LE. The left lower lid was markedly swollen with an extension of the swelling into the medial canthal area. A draining abscess below the medial canthal tendon was noted (Figure 1). The pupils were normal. Slit lamp exam showed the conjunctiva of both eyes to be normal. The corneas were clear and the anterior chambers were quiet. Extraocular motility was normal as were confrontation visual fields. Dilated fundus examination in both eyes was unremarkable. Irrigation of the canaliculi confirmed obstruction of the lower nasolacrimal system.

Laboratory data on admission, including CBC and blood chemistries, were normal. Chest x-ray and x-ray of the skull, orbits, and sinuses were all within normal limits.

Hospital Course: The patient was felt to have a dacyrocystitis with a secondary inferior preseptal cellulitis. Smears and cultures were obtained of the draining material, and she was started on IV methicillin and penicillin. A limited I & D of the left lower lid was performed and a biopsy taken. Initial cultures were negative, and the pathology report was consistent with
MYCOBACTERIUM FORTUITUM

FIGURE 1: Dacryocystitis, lower lid abscess secondary to Mycobacterium fortuitum.

FIGURE 2: Patient in Figure 1, nine months following initial biopsy.

FIGURE 3: Eschar following treatment with cryotherapy.

FIGURE 4: Ten weeks following cryotherapy.

FIGURE 5: One year following treatment.

a chronic granulomatous reaction. Because of the negative cultures and poor response to the systemic antibiotics, the patient was discharged six days later on topical gentamycin drops. Two weeks later, the cultures sent to the Pennsylvania State laboratory were reported to be positive for Mycobacterium fortuitum and were found to be resistant to all antituberculous medications. Due to the resistance to antituberculous medicines, it was decided not to perform a dacryocystorhinostomy (DCR) because of the fear of seeding organisms into the bone or tissues of the nasopharynx.

The patient was followed as an outpatient for two months without change and was then lost to further follow-up until seven months later when she again presented with a chronic abscess of the left lower lid (Figure 2). She had no symptoms of epiphora at this time, however, but because of the persistence of the lid abscess, cryotherapy was attempted in an effort to eradicate the infection. This was applied three times to different areas of the abscess over the course of four weeks using a nitrous oxide Kryomedic probe (Kryomedics Co.) with thermocouple controls. A double freeze thaw cycle was used down to a temperatures of −25 degrees Celsius. Over the next month, she developed an eschar over the areas of cryotherapy that slowly healed (Figure 3). Three months postoperatively, she had only a small fibrous scar a minimal amount of ectropion of the medial portion of the lower lid on the left (Figure 4). When last seen one year later (Figure 5), she had a cosmetically acceptable scar easily covered with makeup, minimal ectropion of the medial portion of the lower lid and no epiphora, although obstruction of the nasolacrimal duct was still present as confirmed by irrigation of the canaliculi.

BACTERIOLOGY

Atypical mycobacteria are classified by Runyon into four groups according to the rate of growth and pigment production of their colonies. This classification is still used in its modified form. Slow growers are in Groups I, II, and III. Group IV, the fast growers, are presently defined by Runyon as organisms able to produce good growth from minimal inocula on egg media within seven days. M. fortuitum and M. chelonei are the two species in Group IV that have been reported as human pathogens. Both are saprophytic and have been isolated from a number of natural sources.

M. fortuitum was first described in 1938 by Crux as
causing a cutaneous abscess at a previous injection site. M. fortuitum is felt to be the most common of the Group IV mycobacterium, although another member of this Group, M. Chelonei may actually be more prevalent in producing disease in humans. This has little significance clinically because both produce similar disease in human.

Mycobacterium fortuitum is capable of producing a variety of clinical infections including pulmonary infection, corneal infection, and cutaneous disease. Cutaneous disease is by far the most common and is usually found following minor trauma as in cuts where the skin has been broken or following injections of medicines. The most frequent trauma-related infection involving mycobacterium fortuitum are post injection abscesses, and these are often initially thought to be sterile.2

As in the case reported here, most cases of M. fortuitum are quite resistant to antituberculous drugs.3,11 Only an occasional strain is susceptible to concentrations of isoniazid obtainable in vivo.1 Likewise, they are usually not sensitive to rifampin.12 However, tetracycline has sometimes been shown to be effective against some strains of M. fortuitum.13

DISCUSSION

This patient presented initially with epiphora. This was managed initially by her referring doctor by probing and irrigation of the obstructed nasolacrimal system. She subsequently developed acute dacryocystitis. As there were no cultures when she first presented with epiphora, it is unknown if Mycobacterium fortuitum was the etiologic agent of the initial dacryocystitis. However, in view of the fact that cutaneous abscess following injections are not infrequently caused by Mycobacterium fortuitum, it is possible that this agent was introduced to the skin by the probing and irrigation, although progression of cellulitis and abscess from a dacryocystitis is also possible without iatrogenic trauma to the lacrimal sac wall.

Review of the literature shows that the treatment of cutaneous infection usually consists of debridement, incision and drainage, and occasionally excision. Cutaneous infections by M. fortuitum tend to run a protracted and remittent course, but virtually always heal with the above treatment. Cryotherapy has not been reported in the treatment of cutaneous disease by M. fortuitum. Because of the unusual nature of the etiologic agent and the fact that it was resistant to all antituberculous drugs, plans for a DCR on this patient were aborted because of the risk of seeding the organism into the nasopharynx and lacrimal bone with possible osteomyelitis. Debridement and excision of the secondary cutaneous abscess would have likely resulted in further naso-lacrimal system damage with possible loss of at least the lower canaliculus along with part of the sac. The risk of an intractable fistula, scarring, and lid deformity were also high. Because of this, it was elected to attempt cryotherapy in the treatment of this lesion, in an effort to destroy the causative organism without damaging the nasolacrimal system. In order to prevent damage of the canalicular and sac mucosa, it is essential to use a thermocouple to monitor temperatures of the underlying tissues so that the canalicular mucosa is not adversely affected. Although not previously reported, cryotherapy proved to be an effective measure in the treatment of this abscess providing a satisfying cosmetic and functional result.

SUMMARY

Mycobacterium fortuitum is an unusual cause of dacryocystitis and granulomatous abscess of the eyelids. There may be an associated history of trauma. Since M. fortuitum is usually resistant to antituberculous medications, debridement and surgical excision of the lesion is usually performed. Because of the difficulties associated with such surgery on the eyelid and medial canthal area, cryotherapy was attempted and proved successful in the treatment of this lesion.

REFERENCES