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ACTINOMYCES ODONTOLYTICUS: A RARE CAUSE OF PRIMARY CHRONIC LACRIMAL CANALICULITIS.

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ABSTRACT

Actinomyces odontolyticus is a predominant Actinomyces species in the oral cavity, pharynx, and distal esophagus. We report a rare case of primary chronic lacrimal canaliculitis caused by *A. odontolyticus*. A 63-year-old woman presented with left eye epiphora for three years associated with medial upper lid swelling, redness, and chronic yellowish discharge. After clinical examination and investigations, she was successfully treated with topical cefuroxime 5%, topical fluorometholone 0.1%, and intracanalicular syringing with cefuroxime 5%. Spontaneous extrusion of canaliculiths led to complete resolution.

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ABSTRACT

Actinomyces odontolyticus is a predominant Actinomyces species in the oral cavity, pharynx, and distal esophagus. We report a rare case of primary chronic lacrimal canaliculitis caused by *A. odontolyticus*. A 63-year-old woman presented with left eye epiphora for three years associated with medial upper lid swelling, redness, and chronic yellowish discharge. After clinical examination and investigations, she was successfully treated with topical cefuroxime 5%, topical fluorometholone 0.1%, and intracanalicular syringing with cefuroxime 5%. Spontaneous extrusion of canaliculiths led to complete resolution.

Keywords: *Actinomyces*, *Actinomyces odontolyticus*, Chronic, Lacrimal, primary canaliculitis.

INTRODUCTION

Ocular infections caused by *Actinomyces* species is uncommon and associated with blinding condition.[1] It is a gram-positive bacteria that is primarily commensal in normal oral cavities and resides in tonsillar crypts, dental plaques, and carious teeth.[2] The name is mistakenly interpreted as fungi because of its striking features of filamentous branching and mycelia -like colonies.[3]

Actinomyces species have been identified in various ocular conditions, including conjunctivitis, blepharitis, carunculitis, dacryocystitis, lacrimal gland ductulitis, crystalline keratopathy, and endophthalmitis.[3] However, *A. odontolyticus*, the causative agent of chronic primary canaliculitis, is relatively rare. While two reported cases of canaliculitis caused by *A. odontolyticus* exhibited different ocular manifestations and were not associated with canaliculith formation,[4,5] it's important to consider the possibility of this organism's infection in patients with a prolonged history of epiphora and swelling of the medial upper lid.

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CASE REPORT

A 63-year-old woman with underlying hypertension, presented with three years of left eye

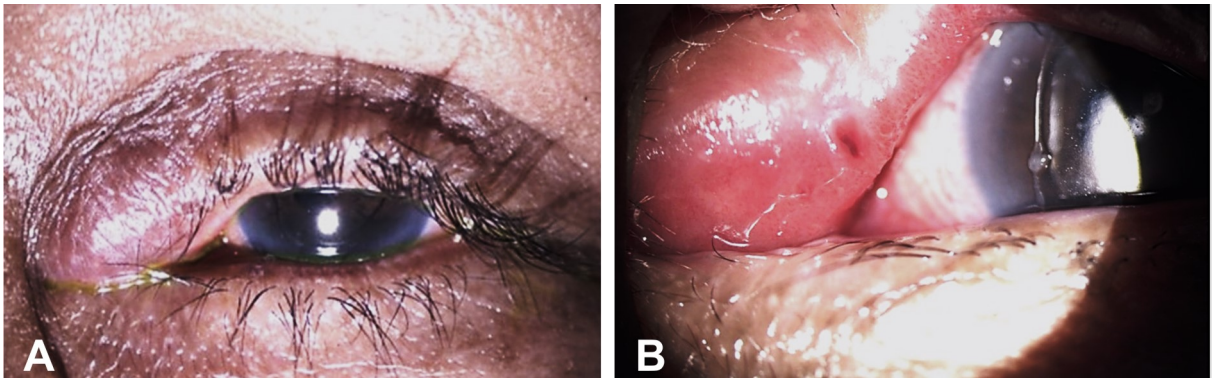

Figure 1: (A) Ill-defined swollen and inflamed mass at the medial end of upper eyelid with pouting and (B) dilated upper punctum of left upper lid (B).

epiphora associated with medial upper lid swelling and redness. She also reported yellowish eye discharge for four months. There was no eye pain or blurring of vision. She denied any prior history of trauma. She had been treated by a private practitioner and was prescribed with combination of topical antibiotics and steroids. However, she had recurrent symptoms.

The ocular examination of the patient showed best corrected visual acuity (BCVA) of 20/20 in the affected eye. There was an ill-defined swollen and inflamed mass at the medial end of the left upper eyelid (Figure 1A) with pouting of the left upper punctum (Figure 1B). There was a presence of yellowish discharge excreted out of the left upper punctum upon pressing on the swelling area. The lid margin was also thickened with medial palpebral conjunctival papillary reaction.

Slit-lamp biomicroscopy examination of the left eye showed that the conjunctiva was diffusely injected. The cornea was clear and absence of anterior chamber activity. The intraocular pressure was normal. Posterior segment examination was unremarkable. Syringing test of both upper and lower puncta showed a hard stop with saline felt in the throat and no regurgitation.

Specimen from left upper punctum discharge and conjunctiva were taken for microbiological examination. Gram staining showed gram-positive rods, a typical feature of *Actinomyces* species (Figure 2). Further detection was done by Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) and A. odontolyticus was isolated.

The patient was initially started on topical ceftazidime 5% every 4 hours and was treated as an outpatient. Upon review at 2 weeks, she claimed the yellowish discharge was reducing, but the swelling and redness persisted. At this stage, a new therapeutic strategy was adopted; topical ceftazidime 5% was changed to topical cefuroxime 5%, instilled 4-hourly. The left upper canaliculi was

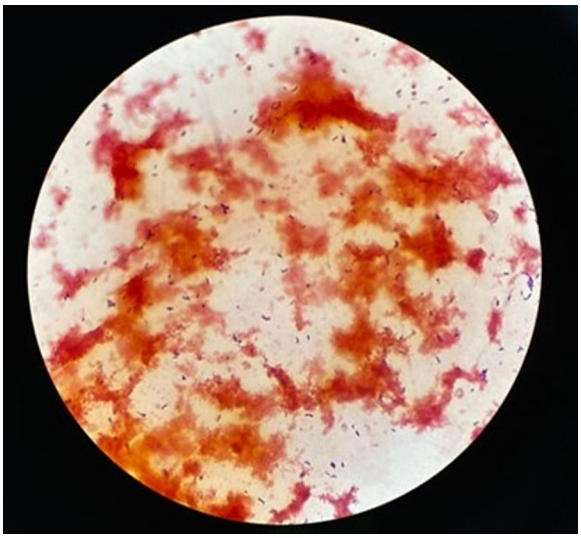

Figure 2: Gram staining of discharge specimen from canaliculi showed positive bacilli of *A. odontolyticu*, viewed under oil-immersion using objective lens of 100X magnification. (Click to enlarge)

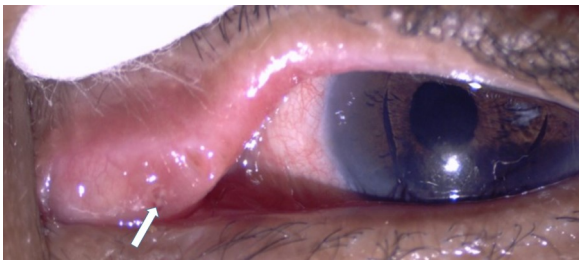

Figure 3: Pericanalicular swelling with canaliculiths seen (white arrow). (Click to enlarge)

also irrigated by syringing twice with a similar topical agent (cefuroxime 5%). Due to the inefficacy of the initial treatment, swabs from the left upper punctum were performed again and yielded negative results. At subsequent follow-up, she had spontaneous extrusion of multiple canaliculiths from the left pericanalicular area (Figure 3). Post extrusion of canaliculiths, she was continued with topical cefuroxime 5%. Topical fluorometholone 0.1% was added to the regime. At 6 weeks of follow-up, the medial upper lid swelling and redness were completely resolved (Figure 4A). The pericanalicular area post spontaneous canaliculith extrusion was well healed with no sinus formation (Figure 4B). The conjunctiva was no longer injected and the patient was symptom-free.

DISCUSSION

The genus *Actinomyces* is a gram-positive non-spore-forming and nonmotile rod naturally resides in the mucous membranes of humans. *A. odontolyticus* was first described in 1958 as a causative agent in human actinomycosis.[3] It is the most prominent species recovered in the oral cavity of children primarily from the plaque on primary teeth, besides the pharynx and distal oesophagus.[2,6,7] In addition to the mouth, *Actinomyces* organisms are common inhabitants of the gut, genitourinary tract, and skin.[2]

Previously, *A. odontolyticus* was detected in small numbers from eye secretions/ tear fluid.[3] It was isolated from conjunctivitis cases and secondary canaliculitis, although, other *Actinomyces* species were identified in patients with post-operative and endogenous endophthalmitis, keratitis, and primary canaliculitis.[3,4] We described this unusual case of *A. odontolyticus* causing primary chronic canaliculitis that may add to the currently sparse knowledge of rarely described species, its presentation, and management.

Canaliculitis due to *Actinomyces* species exhibit indolent and chronic infection, most commonly associated with yellowish concretions.[8] *A. israelii* is the commonest gram-positive identified causative organism.[8,9] *Staphylococcus aureus* and *streptococcus sp.* are the other gram-positive bacteria identified and cultured in patients with canaliculitis.[10] Other organisms that have been implicated in canaliculitis infections although infrequent are *Haemophilus influenza*, *Corynebacterium sp.*, *Propionibacterium sp.*,

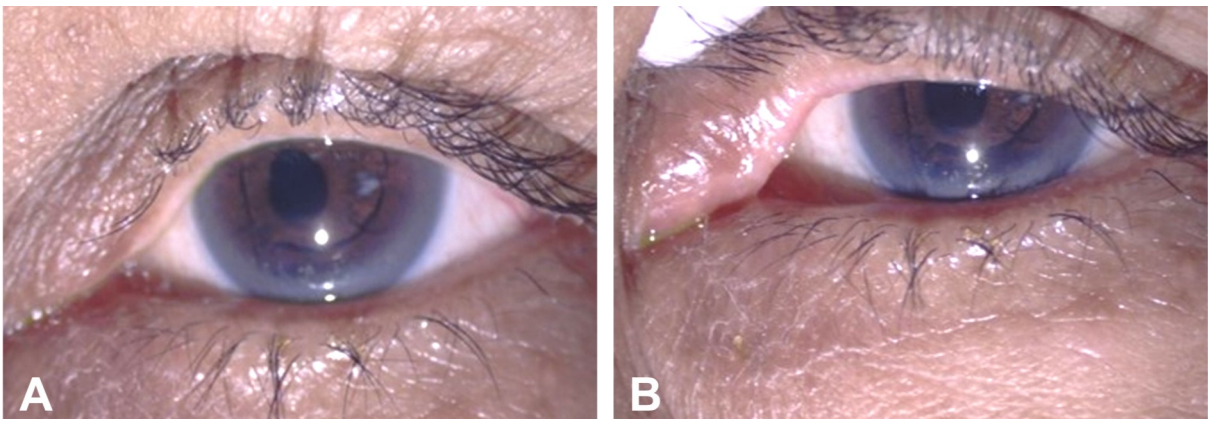

Figure 4: (A) Resolution of medial upper lid swelling and; (B) well healed pericanalicular area post spontaneous canaliculiths extrusion.

and *Moraxella*.[10] It is often misdiagnosed as recurrent infective conjunctivitis, dacryocystitis, or chalazion for its common sign of punctual swelling.[10] Clinically, *A. odontolyticus* exhibits a triad of canaliculitis symptoms and signs similar to other microorganisms causing canaliculitis; (1) pouting punctum, (2) concretions or canaliculith formation, and (3) yellowish discharge. The typical site of involvement is variable. The lower eyelid is more commonly involved in most published data. However, single upper punctum involvement was reported in a case series of canaliculitis due to *Actinomyces* and *Staphylococcus* species.[10]

Isolating *A. odontolyticus* presents a challenge due to its anaerobic nature and slow growth on routine culture. Identification of this organism typically relies on histopathology and biopsy material. Recent discoveries have unveiled new *Actinomyces* species that can cause severe infections in isolated cases.[11] *A. odontolyticus* has been associated with serious eye conditions such as endophthalmitis and keratitis, leading to the emergence of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) as a rapid and reliable method for differentiating *Actinomyces* species.[12] A definitive diagnosis of actinomycotic infections, especially rare ocular infections, holds significant clinical value. In our case, *A. odontolyticus* appeared as gram-positive bacilli on a gram stain slide with a branching pattern, a classical characteristic of *Actinomyces* species. MALDI-TOF-MS successfully identified this pathogenic organism, which had not been previously associated with canaliculitis infection.

Actinomyces species are generally susceptible to beta-lactam antibiotics, and co-administration with beta-lactamase inhibitors can prevent antibiotic resistance and lead to positive outcomes.[13] Oral cefuroxime, with a minimum inhibitory concentration of 1 mg/L, is effective against most anaerobes, including Actinomyces species.[14] In the treatment of Actinomyces species canaliculitis, there have been case series where various topical antibiotics such as cefazolin, ciprofloxacin, chloramphenicol, and penicillin were used with varying responses.[14] However, topical antibiotics alone typically result in partial remission, as observed in our case. Combining topical antibiotics with canaliculi irrigation through syringing has shown promising results.[15] Syringing not only aids in treatment but also helps identify the presence of concretions.[10] Pressing on the lacrimal sac during syringing can facilitate the regurgitation of canaliculiths or concretions. Although no specific clinical guidelines exist for definitive treatment plans in canaliculitis, curettage and punctoplasty of the canaliculi have demonstrated complete resolution of symptoms and signs in the majority of cases.[10,16-17]

CONCLUSION

Chronic primary canaliculitis caused by *A. odontolyticus* is a rare condition, often leading to misdiagnosis. Successful management of this condition relies on a high index of suspicion, followed by the isolation of the causative organism. Treatment typically involves a combination of topical antibiotics, intracanalicular antibiotic syringing, and the extraction of canaliculiths.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

CONSENT

Written informed consent was obtained from the patient for the publication, which included photographs and the details of the case history.

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