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**Case Report**

# Actinomycotic lacrimal canaliculitis: a rare case report

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## ABSTRACT

*Actinomyces israelii* is a gram-positive anaerobic organism commonly associated with canaliculitis in adults. Actinomyces are normal commensal bacteria in humans and primarily cause opportunistic infections during immunosuppressive state or when loss of continuity of epithelial lining in mucosa occurs. Lacrimal canaliculitis is a relatively rare condition and is undiagnosed for long periods of time. Being a relatively rare condition, it is commonly overlooked and undiagnosed for long periods of time. Primary chronic canaliculitis is an uncommon problem and *Actinomycosis* may form in up to 2% of all lacrimal disease. Here present study reports a case of lacrimal canaliculitis caused by *Actinomyces israelii.*

**Keywords:** *Actinomyces*, Filamentous bacteria, Granules, Lacrimal canaliculitis

## INTRODUCTION

Canaliculitis is a chronic infection of the lacrimal canaliculus which can be caused by bacteria, fungi and viruses; the most common agents reported being actinomyces. Actinomyces spp. are filamentous gram-positive anaerobic bacilli of the actinomycetaceae family (genus actinomyces).[1] They were observed and described for the first time in 1854 by Von Graefe. The discoverer of actinomycosis in humans was Adolf James Izrael who in 1878 was the first to diagnose incidents of actinomycosis in his patients; the actinomyces isolated from the infection and described by him in 1891 was named *A. israelii* in his honour.[2]

Actinomycosis is a subacute-to-chronic bacterial infection characterized by contiguous spread, suppurative and granulomatous inflammation, and formation of multiple abscesses and sinus tracts that may discharge 'sulphur granules.[3] The most common clinical forms of actinomycosis are cervicofacial (i.e. lumpy jaw), thoracic, and abdominal. One form of actinomycosis which may cause difficulties in its diagnostics is dacryosolenitis.[4]

Actinomyces are mainly part of the human commensal flora of the oropharynx, gastrointestinal tract, and urogenital tract. Primary canaliculitis is a rare, chronic condition that develops with no underlying cause, usually due to actinomyces infection.[4-6] Lacrimal canaliculitis can cause symptoms such as epiphora, swelling of canaliculi, chronic purulent conjunctivitis and punctal discharge Currently, canaliculitis in humans caused by *A. israelii* accounts for about 2% of all lacrimal duct diseases and affects both males and females, mostly older than 40 years of age.[7] Here present study reports a case of actinomyces canaliculitis in a 60-year-old male.

## CASE REPORT

A 60-year-old male presented with complaints of redness and watering of left eye of 6 months duration associated with pain and ocular discharge. The patient had no history of hypertension, diabetes or trauma during the past 6 months. He had undergone B/L cataract surgery 7 years back.

***Ophthalmological examination***

Ocular examination revealed swollen and inflamed lid of left eye. Conjunctiva was congested. Cornea of left eye was clear. Iris was normal and pupil moderately round and broad. Left pouting punctum was seen. There was B/L pseudophakia. Visual acuity of left eye was 6/6 and in left eye was 6/12.Condition of right eye was normal. Initially patient was started on broad spectrum systemic and topical antibiotics but did not respond to treatment. Later probing was done and large amount of granular cheesy material was expressed from the left upper canaliculus. The material was sent for bacteriological examination.

***Microbiological examination***

Macroscopic examination of the expressed material showed yellowish white granules and concretions (Figure 1). Microscopic examination of crushed granules stained with 1% methylene blue solution, showed a central cauliflower like clump of filamentous microcolonies surrounded by polymorphonuclear neutrophils (Figure 2). Kinyoun's acid-fast staining. and gram staining of granules was done. Non- acid-fast gram positive, intertwined branching filaments suggestive of actinomycetes species were seen (Figure 3). A portion of the granules was inoculated on saboraud's dextrose agar (SDA), 5-10% sheep blood agar and chocolate agar. SDA was incubated at 25 degrees and examined daily for 3 weeks. The remaining media were incubated at $37^0$C in candle jar under anaerobic conditions. Culture yielded growth of irregular, grey, non-haemolytic "molar tooth" like colonies suggestive of actinomyces (Figure 4). Gram staining of the growth revealed gram positive filamentous bacteria. The isolate was further identified by negative catalase, indole, H2S production and positive esculin hydrolysis tests. Fermentation was positive for glucose, lactose, sucrose, xylose and the isolate tested weakly positive for nitrate reduction. Patient was put on systemic as well as topical azithromycin for 2 weeks and showed dramatic improvement.

**Figure 1: The sulphur granules of *Actinomyces*.**

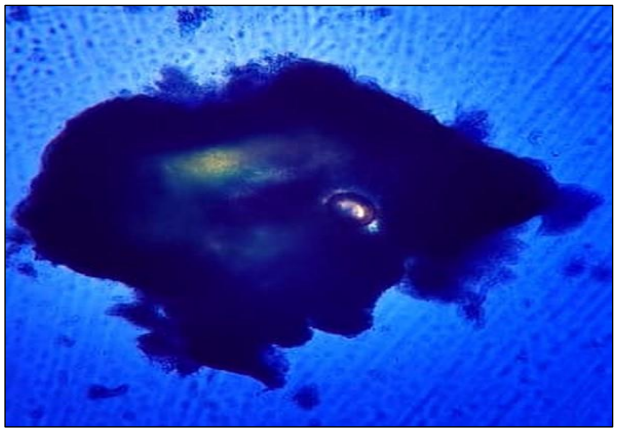

**Figure 2: Methylene blue staining of crushed actinomycotic granule showing cauliflower like shape (100X).**

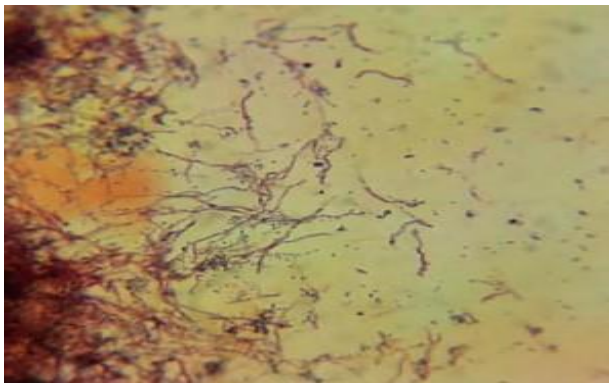

**Figure 3: Irregularly arranged, delicate, branched, gram-positive filaments of *Actinomyces israelii* (Gram's stain, ×100).**

**Figure 4: Molar tooth colonies of *Actinomyces isrraelii* on Chocolate Agar.**

## DISCUSSION

Actinomyces belongs to phylum Actinobacteria. Actinomyces are branched gram positive, non-acid fast, non-sporing anaerobes, that occur as normal commensal flora but can be associated with chronic infections. Of the more than 30 species, *A israelii* is the most common

human pathogen and is found in most clinical presentations.[8]

Actinomyces species are commensals in oral cavity, gastrointestinal tract and female genital tract, and can reach the lacrimal system either directly or indirectly through contaminated oral secretions when tissue integrity is breached through a mucosal lesion, they can invade local structures and organs and become pathogenic. Actinomycosis is therefore mainly an endogenous infection.[9]

Ocular infections caused by Actinomyces species are uncommon. It usually causes unilateral chronic conjunctivitis associated with canaliculitis.[10] Actinomyces infection is characterized by production of yellow concretions known as sulphur granules. Actinomyces is a slow growing anaerobe, so the culture can be difficult and microbiological identification may be complicated by superadded infections.

Majority of the cases reported of lacrimal canaliculitis have a clear history of trauma but in our case, the source of actinomycosis infection was unknown. Actinomycosis in such an unusual location may pose problems in diagnostics and draws attention to its frequent preliminary wrong diagnosis.[11] The diagnosis is based on the microbiological examination of discharge obtained from the lacrimal ducts with the characteristic appearance of grey-yellow lumps with a compact structure. Branching filaments during Gram staining are characteristic of *Actinomyces* species, although culturing of actinomyces is difficult due to its anaerobic nature.[12-14] Most actinomyces strains are sensitive to a wide range of antibiotics. The present isolate was sensitive to azithromycin and penicillin.

## CONCLUSION

This case report shows the importance of considering actinomyces infection in case of patients of lacrimal canaliculitis presenting with chronic or recurrent conjunctivitis. Only a microbiologic examination including cultivation of concretion and secretion enabled us to a reliable proof of actinomyces leading to appropriate therapy for canaliculitis.

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## REFERENCES

1. Russo TA. Agents of actinomycosis. In: Mandell GL, Bennett JE, Dolin R, eds. Principles and practice of infectious diseases. 7th ed. Elsevier Churchill Livingstone, 2010:3209-19.
2. Briscoe D, Edelstein E, Zacharopoulos I, Keness Y, Kilman A, Zur F, et al. Actinomyces canaliculitis: diagnosis of a masquerading disease. Graefes Arch Clin Exp Ophthalmol. 2004;242(8):682-686.
3. De Montpreville VT, Nashashibi N, Dulmet EM. Actinomycosis and other bronchopulmonary infections with bacterial granules. Ann Diagn Pathol. 1999;3:67-74.
4. Demant E, Hurwitz JJ. Canaliculitis: review of 12 cases. Can J Ophthalmol. 1980;15(2):73-5.
5. Marthin JK, Lindegaard J, Prause JU, Heegaard S. Lesions of the lacrimal drainage system: a clinicopathological study of 643 biopsy specimens of the lacrimal drainage system in Denmark 1910-1999. Acta Ophthalmol Scand. 2005;83:94-99.
6. Anand S, Hollingworth K, Kumar V, Sandramouli S. Canaliculitis: the incidence of long-term epiphora following canaliculotomy. Orbit. 2004;23:19-26.
7. Vagarali MA, Karadesai SG, Dandur MS. Lacrimal canaliculitis due to actinomyces: a rare entity. Indian J Pathol Microbiol. 2011;54 661-663.
8. Pulverer G, Schutt-Gerowitt H, Schaal KP. Human cervicofacial actinomycoses: microbiological data for 1997 cases. Clin Infect Dis. 2003;37:490-7.
9. Smego RA Jr, Foglia G. Actinomycosis. Clin Infect Dis 1998;26:1255- 61; quiz 62-3.
10. Weese WC, Smith 1M. A study of 57 cases of actinomycosis over a 36-year period. A diagnostic 'failure' with good prognosis after treatment. Arch Intern Med. 1975;135:1562-8.
11. Vujancević S, Meyer-Rüsenberg HW. Therapy for actinomycosis in the lacrimal pathway. Klin Monbl Augenheilkd. 2010; 227(7):568-74.
12. Hussain I., Bonshek R.E., Loudon K. Canalicular infection caused by Actinomyces. Eye (Lond) 1993;7(4):542-544.
13. Briscoe D., Edelstein E., Zacharopoulos I. Actinomyces canaliculitis: diagnosis of a masquerading disease. Graefes Arch Clin Exp Ophthalmol. 2004;242:682-6.
14. Mohan E.R., Kabra S., Udhay P, Madhavan HN. Intracanalicular antibiotics may obviate the need for surgical management of chronic suppurative canaliculitis. Indian J Ophthalmol. 2008;56:338-40.

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