Actinomyces naeslundii: A rare cause of chronic purulent canaliculitis

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ABSTRACT

Chronic canaliculitis is an uncommon disease with a protracted course. Its management is prolonged and difficult. An elderly lady was diagnosed to have left lower chronic purulent canaliculitis. Conservative treatment alone did not effect a complete cure. Canaliculotomy with removal of sulphur granules and canalicular curettage also had to be performed to achieve a permanent cure. Unlike many cases of canaliculitis, this patient presented numerous complications confined to the canaliculus. To the best of our knowledge, this is the first report of *Actinomyces naeslundii* (*A. naeslundii)* causing chronic purulent canaliculitis and associated complications. *A. naeslundii* canaliculitis should be considered in the differential diagnosis of chronic conjunctivitis with epiphora.

Keywords: *Actinomyces naeslundii*, canaliculotomy, canaliculitis, dacryocystitis

INTRODUCTION

Chronic canaliculitis is a rare uni-ocular infection of the lacrimal canaliculus, which drains tears from the eye. [1-3] It may be caused by bacteria, fungi, or viruses. *Actinomyces israeli* (*A. isreali*) is the commonest bacteria reported to cause chronic canaliculitis. [2, 4] It is often misdiagnosed as chronic conjunctivitis and may be inadequately treated. [2, 5] This condition predominantly affects the elderly population. *Actinomyces naeslundii* (*A. naeslundii*) is a commensal of the oral cavity, and has been implicated in periodontal disease and dental root caries. We believe this is the first report of *A. naeslundii* causing chronic purulent canaliculitis with the associated complications.

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CASE REPORT

A 74-year-old Malay lady was referred to the eye clinic with chronic watering, discharge, pain and intermittent conjunctivitis, involving her left eye which had failed to respond to medical treatment involving systemic and topical antibiotics. She gave a history of sporadic pain and redness with persistent watering and discharge. She was known to have hypertension with renal impairment, atrial

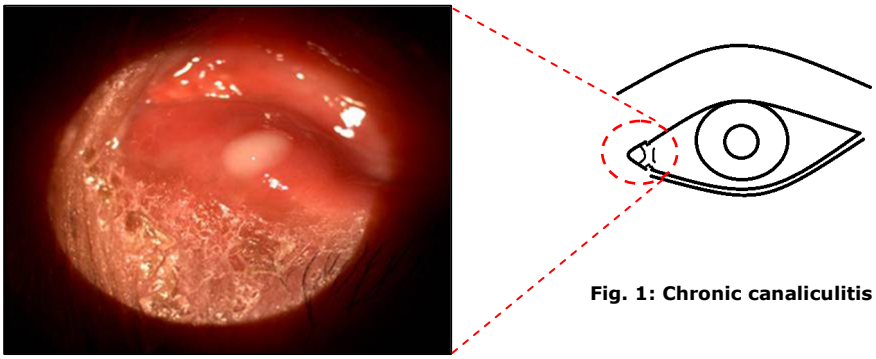

Fig. 1: Chronic canaliculitis with pouting punctum.

fibrillation, mitral regurgitation and sick sinus syndrome with an implanted permanent cardiac pacemaker. Examination showed a watery left eye with purulent discharge and matted lashes. There was associated erythema and swelling of the inner end of the lower eyelid and medial angular congestion. The lower punctum was stenosed (Figure 1), and appeared red, swollen and pouting. The lower punctum and canaliculus was tender to gentle digital manipulation which expressed a thick white tenacious discharge containing solid pale-yellow sulphur granules (Figure 1). The lower canaliculus was strikingly thickened. Probing of the left upper canaliculus revealed a 'hard stop' whilst that of the lower canaliculus was gritty in nature with a 'soft stop'. Chronic dacryocystitis was also identified in the same eye as evidenced by regurgitation of mucoid substance when the upper punctum was irrigated with saline. revealed immature cataracts in both eyes and evidence of dryness in the right eye.

A working diagnosis of left chronic dacryocystitis with ipsilateral lower purulent canaliculitis was made. The expressed purulent materials from upper and lower canaliculi were separately sent for bacteriological analysis and sensitivity testing. Gram-staining of the lower canaliculus sample revealed Gram positive cocci in small groups and pairs with large numbers of gram positive branching filaments (Figure 2), while that from the upper canaliculus showed chain forms of gram positive cocci. Culture of the lower canaliculus sample showed profuse growth of *A. naeslundii* along with *Staphylococcus aureus* whilst that of the upper canaliculus showed a moderate growth of *Streptococci* Lancefield group F.

Based on the antibiotic sensitivity, she was started on oral doxycycline, 100mg twice daily with topical ciprofloxacin drops four times a day. However doxycycline had to be discontinued two days later following the development of dyspepsia and was replaced with

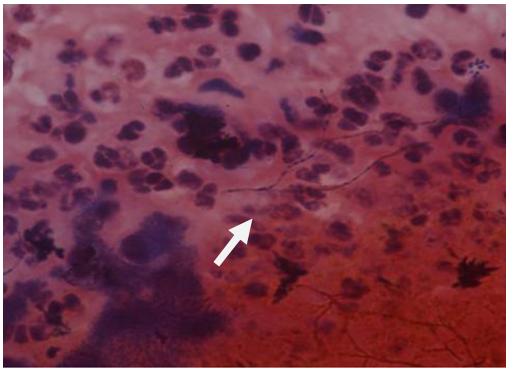

Fig. 2: *Actinomyces naeslundii* under gram stain, branching filaments are indicated by white arrow (H&E stain Magnification x40).

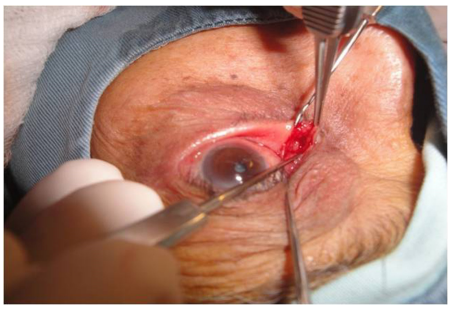

Fig. 3: Canaliculus slit open showing sulphur granules.

oral amoxicillin-clavulanic acid 625mg twice daily for 10 days. Although some improvement was noted, the infection did not completely subside as evidenced by continuing discharge of pus and granules. She was also additionally treated with bi-weekly intracanalicular lavage with 5% povidone iodine for her lower canaliculus for three weeks.

A single-snip lower canaliculotomy under local anaesthesia with sedation was whereby daily lavage with povidone iodine was performed for three days pre-operatively. Intra-operatively, the stenosed punctum was dilated gently and the canaliculus was irrigated with iodine solution. The lower punctum and canaliculus were then probed and slit, then opened with a single snip along its posterior aspect. Exploration revealed a sausage-like gross dilatation of the lower canaliculus with the distal end blocked by greyish fibrous tissue. The canalicular mucosa was oedematous and thickened. Immediately beyond the punctum, there was a diverticulum inferiorly, which was studded with large sulphur granules (Figure 3). The granules were removed, the mucosa was curetted, and sent for histopathological studies. Considering the high risks involved, surgery was completed with a dacryocystectomy on the same side.

The post-operative period was uneventful and she was discharged on the second day. She was started on oral Ciprofloxacin 500mg twice daily. for one month. The wound healed well and the sutures were removed after seven days. She was followed-up in the clinic for six months after surgery and she has not shown any recurrence or complications.

DISCUSSION

Actinomyces are cast-forming Gram-positive, non-acid fast, non-spore bearing anaerobic rods, characterised by filamentous branching at acute angles, and are difficult to isolate, identify and culture. Although these organisms are normal commensals of the mouth, gastrointestinal tract and the female genital tract, they may cause infectious disease (Actinomycosis) of which oral and cervicofacial Actinomycosis are the commonest. Though rare, pelvic Actinomycosis, is a known complication of intra-uterine contraceptive devices (IUCD). When it affects the abdominal cavity, Actinomycosis may present with a neoplasm-like mass. It is known to cause liver, splenic, colon and caecal abscesses.

These organisms are also known to cause opportunistic infections within hollow spaces, like the canaliculus, producing indolent and slowly progressive infection with yellow sulphur granules. [2] The granules are colonies of intertwined branching *Actinomyces* filaments, solidified by tissue exudates and pus cells. Actinomyces canaliculitis accounts for approximately 2% of all lacrimal drainage system diseases presenting with epiphora. [2, 5]

Majority of reported cases involved females and the lower canaliculus. [3, 6, 7] Though complete cure has been reported with

conservative management, our case needed additional surgical intervention namely, punctoplasty and snip canaliculotomy with evacuation of the sulphur granules and curettage. The organisms, although usually sparse in the pus, are concentrated in the sulphur granules almost always form part of a mixed infection.

Actinomyces naeslundii have similar morphological features as other *Actinomyces* strains. PubMed search of the literature showed no previously reported cases of *A. naeslundii*-related chronic canaliculitis. Hence, we believe this the first report of such an infection.

Various treatment options have been reported with some advocating that complete cure can be achieved with conservative line of treatment alone but others are of the opinions that surgical treatment namely punctoplasty, canaliculotomy and expression of granules with or without curettage is the line of treatment. [1, 8] Hussain *et al*. reported that medical therapy alone could not eradicate the infection. [9] Surgical procedures such as punctoplasty and canaliculotomy are safe procedure. [1, 10, 11] Our patient had chronic canaliculitis with stenosed punctum as well as chronic dacryocystitis on the same side, requiring both medical and surgical management.

In conclusion, primary chronic purulent canaliculitis is a rare form of unilateral lacrimal system pathology. However, it should be considered in the differential diagnosis of epiphora and chronic or recurrent conjunctivitis. Our case highlights a rare cause of chronic purulent canaliculitis, which can also be difficult to isolate and identify. A complete eradication of the canalicular *Actinomyces* infection cannot be achieved unless and until all the concretions are removed.

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