

# Acute dacryocystitis secondary to *Burkholderia cepacia* and *Sphingomonas paucimobilis* mixed infection: A novel case report

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## Abstract:

Acute dacryocystitis caused by *Burkholderia Cepacia* and *Sphingomonas Paucimobilis* is uncommon. To the best of our knowledge, presence of mixed pathogens *Burkholderia Cepacia* and *Sphingomonas Paucimobilis* causing acute dacryocystitis in immunocompetent patients never been described. *Burkholderia Cepacia* and *Sphingomonas Paucimobilis* been reported only as a single microorganism causing other ocular infections in immunocompromised patients. Middle age, medically free female patient, presented to the emergency department at our hospital, with a history of nasolacrimal duct obstruct (NLDO) complaining of inferior preocular swelling associated with localized pain diagnosed as acute dacryocystitis. She was on oral Amoxicillin/clavulanic acid, oral Nitroimidazole antimicrobial and topical Tobramycin from elsewhere. However, no improvement had been noticed. We kept the patient on the same medications and swaps taken for culture and sensitivity. Patient presented to the first follow-up appointment with no improvement on her status. Culture and sensitivity revealed 2 pathogens: *Burkholderia Cepacia* and *Sphingomonas Paucimobilis*. We have changed the antibiotic to oral Trimethoprim/ Sulfamethoxazole as it showed positive sensitivity to the pathogens based on the sensitivity chart. Second follow-up appointment patient's condition improved.

## Keywords:

*Burkholderia cepacia*, dacryocystitis, *Sphingomonas paucimobilis*

## INTRODUCTION

*Burkholderia cepacia* and *Sphingomonas paucimobilis* both are aerobic, Gram negative, oxidase positive, catalase positive, nonfermentative bacilli, affecting mainly immunocompromised patients.<sup>[1,2]</sup> Rarely, ocular infections including endophthalmitis and keratitis were reported with these pathogens.<sup>[3-11]</sup>

Up to our knowledge, this is the first case report describing a case of acute dacryocystitis caused by *B. cepacia* and *S. paucimobilis*.

## CASE REPORT

A 44-year-old female patient, unknown to have medical illness before, presented to the emergency department at our hospital, complaining of

inferior periocular painful swelling in her left started 4 days prior to the presentation. Initially the patient visited a local ophthalmology clinic in her city, and she was diagnosed with dacryocystitis secondary to nasolacrimal duct obstruct (NLDO). Oral Amoxicillin/clavulanic acid, oral Nitroimidazole antimicrobial and topical Tobramycin were prescribed to the patient, although with poor patient's compliance. However, she had worsening in her symptoms. Patient presented to us with swelling at left lacrimal sac area, with history of similar episodes in the past. She has no clear history of previous trauma, surgery, cosmetic intervention, or filler injection. Upon examination body temperature was 38 Celsius degrees, no pain with eye movement, full extraocular motility, no proptosis, uncorrected visual acuity was 20/20 OU, color vision was 15/15 OU, intraocular pressure was within normal limits, exophthalmometer at base

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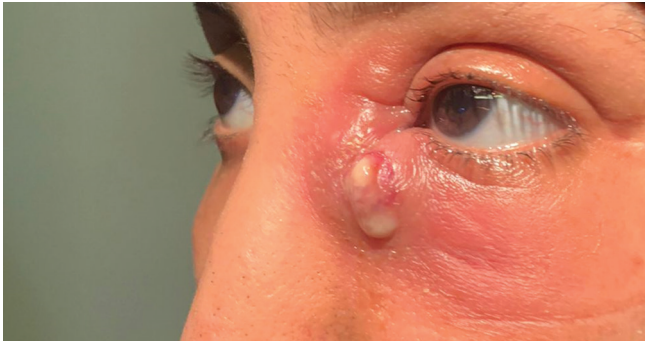
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**Figure 1:** Left medial canthus swelling with discharge at presentation

**Table 1: Microbiology results report of culture and sensitivity of the left lacrimal system swab**

Test Item	Test result
Specimen Source	Nasolacrimal duct
Specimen Site	Left lacrimal system
Specimen Type	Swab
Pathogen 1	Burkholderia Cepacia
Pathogen 2	Sphingomonas Paucimobilis

110mm: 21mm for both eyes and pupil were equally reactive without afferent pupillary defect. On slit-lamp examination: large erythematous swelling at the medial canthus area of the left eye. the clinical diagnosis was acute dacryocystitis with draining abscess with secondary preseptal cellulitis [Figure 1]. Swab from the pus was taken for culture and sensitivity, stressing on the medications compliance to see the response and warm compressors to encourage further draining of the pus. Few days later she came to the follow up appointment with regressing of the preseptal inflammation however she still has the swelling at the lacrimal sac area [Figure 2]. Culture and sensitivity revealed two pathogens: *Burkholderia Cepacia* and *Sphingomonas Paucimobilis*. Clinical pharmacist at our hospital was consulted regarding the choice of antimicrobial therapy as the sensitivity to those pathogens was not available. Oral Trimethoprim/ Sulfamethoxazole started as it covers the offending pathogens in addition to topical Tobramycin [Table 1]. In the follow-up appointment patient’s symptoms improved but the epiphora persist. however, patient needed further surgical management for NLDO.

## DISCUSSION

*Burkholderia cepacia* is Gram-negative bacilli, belong to the genus pseudomonas.<sup>[3]</sup> *Burkholderia cepacia* was first discovered in the 1950s by Walter Hagemeyer *et al.*<sup>[8]</sup> It is usually found in water, soil, and plants.<sup>[3]</sup> In addition, known to contaminate healthcare-related products such as local anaesthetic eye drops, 10balanced salt solution, as well as hyaluronic acid, trypan blue.<sup>[3-11]</sup> It is considered a rare cause of bacterial keratitis and post-operative endophthalmitis.<sup>[3,8]</sup> Herpetic keratitis being the most common predisposing factor for *B. cepacia* keratitis.<sup>[11]</sup> One of the case series reported that *B. cepacia* were susceptible to ceftazidime.<sup>[11]</sup> *Sphingomonas*



**Figure 2:** Left medial canthus swelling at the follow-up appointment

*paucimobilis* is gram-negative bacillus.<sup>[4]</sup> *S. paucimobilis* infection was reported in human for the first time in 1979 by Seo SW *et al.*<sup>[4]</sup> as an opportunistic pathogen known to cause infections in both healthy and immunocompromised individuals.<sup>[6]</sup> Has been reported to cause Infections like bacteraemia/septicaemia caused by contaminated solutions, e.g., distilled water, haemodialysis fluid and sterile drug solutions.<sup>[2]</sup> Also, known to cause various ocular infections such as endophthalmitis, panophthalmitis and keratitis usually associated with an underlying risk factor such as peri-partum or postpartum phase, cataract surgery, contact lens use, neurotrophic keratopathy, or ocular trauma.<sup>[6-7]</sup> Furthermore, associated with osteomyelitis, sepsis, septic shock, septic arthritis, and meningitis.<sup>[2]</sup> It has been reported that *S. paucimobilis* responded well to fluoroquinolones.<sup>[9]</sup> In our case, the patient was diagnosed as acute dacryocystitis secondary to nasolacrimal duct obstruct, it is crucial to take swabs routinely as these organisms are not initially suspected and would be difficult to manage with empirical antibiotics.<sup>[12]</sup> Treatment with oral Trimethoprim/ Sulfamethoxazole and topical Tobramycin is a reasonable choice in managing cases of acute dacryocystitis caused by *Burkholderia Cepacia* and *Sphingomonas Paucimobilis*.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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