

Cardiobacterium hominis-induced acute dacryocystitis and lacrimal abscess

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Cardiobacterium hominis is a member of the HACEK (*Haemophilus* sp., *Actinobacillus actinomycetemcomitans*, *C. hominis*, *Eikenella corrodens*, and *Kingella kingae*) group commonly associated with endocarditis and is normally present in the respiratory tract. We describe the first case of acute dacryocystitis with lacrimal abscess caused by *C. hominis* along with a brief review of the literature. The patient responded to oral and topical ciprofloxacin after incision and drainage and awaits dacryocystorhinostomy.

Key words: Lacrimal abscess, dacryocystitis, *cardiobacterium hominis*

Acute dacryocystitis is an inflammation of the lacrimal sac with symptoms such as pain, swelling at the medial canthus, watering eye, and discharge. It has a potential to progress to the orbital cellulitis and rarely to life-threatening infections like meningitis. Several studies have described the microbiologic profile of dacryocystitis. In a multicentric study, Mills and co-workers found Gram-positive organisms such as *Staphylococcus* to be the most predominant organism and the frequency of methicillin-resistant *Staphylococcus aureus* was high in the acute dacryocystitis group.^[1] Recent studies have shown a change in the trends of the microbiologic spectrum with an increase in the frequency of isolation of Gram-negative bacteria.^[2] *Cardiobacterium hominis* is a member of the HACEK (*Haemophilus* sp., *Actinobacillus actinomycetemcomitans*, *C. hominis*, *Eikenella corrodens*, and *Kingella kingae*) group commonly associated with endocarditis and is normally present in the oropharynx

and the respiratory tract.^[3] To the best of our knowledge, we report the first case of *C. hominis* dacryocystitis.

Case Report

A 55-year-old female presented to us with complaints of swelling and pain below the right medial canthus since five days and a yellowish discoloration of the lesion since two days. There was a history of watering from the right eye since six months; however, there was no significant systemic history. On examination, her best corrected visual acuity was 20/20 and N6 in both eyes. The right eye showed an ill-defined swelling below the right medial canthus. The swelling was fluctuant, tender, and non-motile with surrounding hyperemia and induration. There was a pus point threatening to drain spontaneously [Fig. 1]. Otherwise, anterior and posterior segments of both the eyes were within normal limits. Based on this, a diagnosis of right lacrimal abscess following acute dacryocystitis was made. The cardiac and respiratory examination was within normal limits. The patient was subjected to an incision and drainage, pus was sent for complete microbiological work-up, and oral and topical ciprofloxacin and oral ibuprofen were started as post operative medications. Evaluation at the end of one week was suggestive of resolution of the dacryocystitis. The patient underwent a successful dacryocystorhinostomy with intubation to bypass the blocked nasolacrimal duct and prevent recurrence of acute dacryocystitis.

The pus specimen collected was subjected to direct smear Gram staining as well as inoculated in blood agar and chocolate agar medium. The direct smear revealed the presence of polymorphs 0-plenty/HPF (HPF: High power field) and Gram-negative bacilli 0-10/HPF. Growth was observed after three days of incubation on chocolate agar at 37°C with 5% carbon dioxide (CO₂) and scanty growth on blood agar. Colonies appeared as smooth, butyrous, and glistening [Fig. 2]. Gram stain revealed Gram-negative, pleomorphic organisms. Conventional biochemical tests revealed that the organism was indole producing, catalase negative, oxidase positive, and urease negative. Sugars including glucose, sucrose, maltose, and mannitol were fermented. The isolate was eventually identified as *C. hominis* using a Vitek® 2 compact identification system (Biomerieux, North Carolina, USA) [Fig. 3]. Antibiotic-susceptibility test was determined by the Kirby Bauer disk diffusion method. Guidelines of the Clinical and Laboratory Standards Institute (CLSI) were followed for performing and interpreting the tests. Amikacin (30 µg), ofloxacin (5 µg), gentamicin (10 µg), tobramycin (10 µg), ceftazidime (30 µg), moxifloxacin (5 µg), gatifloxacin (5 µg), cefuroxime (30 µg), chloramphenicol (30 µg), and ciprofloxacin (5 µg) were used. *C. hominis* was sensitive to all the drugs tested.

Discussion

C. hominis is a Gram-negative bacilli of HACEK. It is a normal flora of the respiratory tract. It mainly causes endocarditis, and it accounts for 0.1% of all the cases of endocarditis. Several studies have shown the relationship of *C. hominis* with endocarditis.^[3-7] The identification of *C. hominis* is well established with the Vitek® 2 compact identification system.

Association of the HACEK group with ocular infections has been reported. Bilateral endogenous endophthalmitis caused

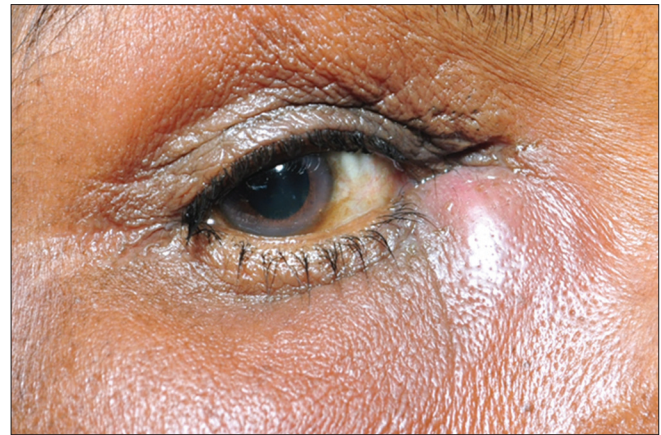


Figure 1: Lacrimal abscess of the right eye with surrounding acute inflammation

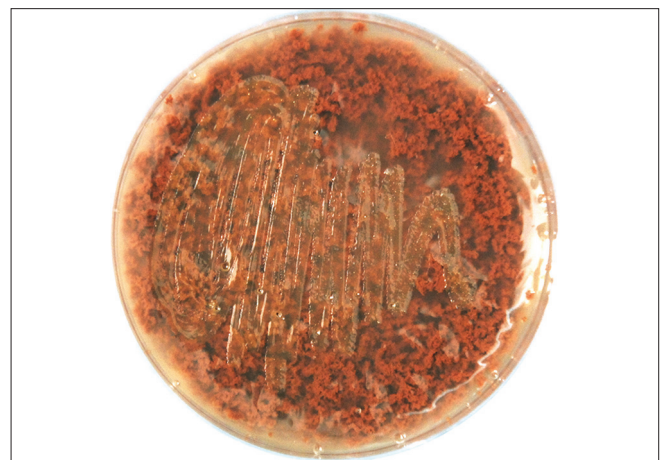


Figure 2: Chocolate agar showing confluent bacterial growth

| Identification Information | Card: NH | Lot Number: 245184040 | Expires: Dec 28, 2011 12:00 CST | | | | | | | | | | | | | | |
|--|---|---------------------------|--|------|---|----|-------|-----|----|-------|---|----|------|---|----|------|---|
| Completed: Apr 18, 2011 23:45 CDT | Status: Final | Analysis Time: 6:00 hours | | | | | | | | | | | | | | | |
| Selected Organism | 85% Probability Biounumber: 1716570343 | | Cardiobacterium hominis Confidence: Acceptable Identification | | | | | | | | | | | | | | |
| SRP Organism | Analysis Organisms and Tests to Separate: | | | | | | | | | | | | | | | | |
| Analysis Messages: | | | | | | | | | | | | | | | | | |
| Contradicting Typical Biopatterns) | | | | | | | | | | | | | | | | | |
| Cardiobacterium hominis URE(1),dGAL(1),PHOS(14). | | | | | | | | | | | | | | | | | |
| Biochemical Details | | | | | | | | | | | | | | | | | |
| 1 | AspA | (+) | 2 | GOT | - | 3 | LysA | - | 4 | dGAL | + | 5 | LeuA | + | 6 | ELLM | + |
| 7 | PheA | + | 8 | ProA | - | 10 | PyrA | - | 13 | TyrA | - | 15 | APPA | + | 16 | dGLU | + |
| 19 | GLYG | - | 20 | dmNE | + | 22 | dMAL | (+) | 28 | SAC | + | 33 | NAG | + | 36 | URE | + |
| 39 | BGALI | - | 40 | ODC | - | 41 | AAARA | - | 45 | PVATE | - | 46 | PHC | - | 47 | dMLT | - |
| 51 | MTE | - | 52 | ISLM | - | 59 | PhyCS | + | 61 | dRUB2 | + | 62 | OPS | + | 64 | dOYL | - |
| Installed VITEK 2 Systems Version: 05.04 | | | | | | | | | | | | | | | | | |
| MIC Interpretation Guideline: AES Parameter Set Name: | | | | | | | | | | | | | | | | | |
| Therapeutic Interpretation Guideline: AES Parameter Last Modified: | | | | | | | | | | | | | | | | | |
| Page 1 of 1 | | | | | | | | | | | | | | | | | |

Figure 3: Vitek® data identifying the organism as *Cardiobacterium hominis*

by *A. actinomycetemcomitans* has been reported.^[8,9] To best of our knowledge, there is no report of dacryocystitis caused by the HACEK group.

Following incision and drainage of the lacrimal abscess, the patient was advised oral and topical ciprofloxacin for

a week. The patient responded well with a good clinical resolution of the acute infection. The patient later underwent a successful dacryocystorhinostomy with intubation to bypass the blocked nasolacrimal duct and prevent recurrence of acute dacryocystitis. It is important to take the history of past upper respiratory or cardiac infections preceding acute dacryocystitis as the original focus of *C. hominis* may be in these organs. The clinical significance of the microbiological evaluation of the pus and discharge following an incision and drainage needs to be emphasized, as sometimes we may isolate common organisms with resistant antibiotic profiles and occasionally rare organisms with unknown profiles as in the present case, thus helping in the appropriate management of the patient.

In summary, we present the first case report of isolation of *C. hominis* from a case of acute dacryocystitis. It is important for the ophthalmologists and ocular microbiologists to be aware of the presence of such organisms for the proper management and treatment of the patients.

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