

## *Capnocytophaga* keratitis

THOMAS J ROUSSEL,\* MICHAEL S OSATO, AND KIRK R WILHELMUS

*From the Ocular Microbiology Laboratory, Cullen Eye Institute, Houston, USA*

**SUMMARY** We report two cases of bacterial keratitis caused by *Capnocytophaga*, a genus of capnophilic Gram negative bacilli. Both responded to topical and subconjunctival clindamycin.

*Capnocytophaga* is a genus of gliding Gram negative bacilli that is part of the normal gingival flora. This organism may also be an opportunistic pathogen and has been isolated from blood, transtracheal aspirate, and spinal fluid<sup>1</sup>. We describe the first two cases of bacterial keratitis caused by this organism and provide treatment recommendations.

### Case reports

#### CASE 1

A 43-year-old woman with neovascular glaucoma and corneal oedema developed a 15 mm<sup>2</sup> suppurative corneal ulceration with adherent endothelial plaque and hypopyon. Despite hourly topical 5% and daily subconjunctival 100 mg cefazolin no improvement occurred during the first 72 hours. Initial corneal scrapings subsequently showed moderate growth of *Capnocytophaga ochracea* on blood and chocolate agar plates. Because broth dilution sensitivity testing showed a minimal inhibitory concentration (MIC) less than 0.125 µg/ml (mg/l) for clindamycin, cefazolin was discontinued, and clindamycin was instituted topically (5%, one drop every 15 minutes) and subconjunctivally (75 mg, twice daily). Progressive improvement occurred with re-epithelialisation and reduced stromal inflammation. Topical prednisolone acetate 1% was later added, and the medications were then gradually tapered. Visual acuity was limited by proliferative diabetic retinopathy.

#### CASE 2

Four days after blunt ocular trauma a 35-year-old black man developed a 5.9 mm<sup>2</sup> suppurative corneal ulcer involving the anterior two thirds of the corneal

stroma with an inflammatory plaque. Gram stained smears of corneal scrapings showed numerous polymorphonuclear leucocytes but no micro-organisms. Topical 1.4% gentamicin and 5% cefazolin were begun in addition to twice daily subconjunctival injections of 20 mg gentamicin and 100 mg cefazolin. During the next three days stromal suppuration increased, a circumferential limbal infiltrate appeared, and progressive thinning occurred. Moderate growth of *Capnocytophaga sputigena* was identified on blood and chocolate agar culture plates sensitive to clindamycin with an MIC of 0.25 µg/ml (mg/l). Antibacterial medications were changed to topical (5%, one drop every 15 min) and subconjunctival (75 mg, twice daily) clindamycin. Twenty four hours after treatment with clindamycin the disease had stopped progressing and after 48 hours substantial improvement had occurred with decreased corneal oedema. The cornea continued to clear after administration of topical 1% prednisolone acetate.

### Discussion

*Capnocytophaga* are unique Gram negative bacilli that have gliding motility and capnophilic metabolism with production of acetate and succinate.<sup>1,2</sup> Using morphological and chemotaxonomic data we found the genus to be distinct from bacteroides, and it can be separated into three species: *Cochracea*, *Csputigena*, and *Cgingivalis*. These organisms are part of the normal oral microflora and are occasionally responsible for periodontitis. Other infections such as septicaemia,<sup>3</sup> endocarditis,<sup>4</sup> and cervical abscess<sup>5</sup> have also occurred, especially in immunocompromised patients.

Bacterial keratitis has not previously been described as being due to capnocytophaga. While we did not identify the organism on the initial Gram stained smears, cultures of corneal scrapings subsequently showed a moderate growth on multiple

\*Present address: Department of Ophthalmology, Flinders Medical Centre, Adelaide, South Australia.

Correspondence to K R Wilhelmus, MD, 6501 Fannin Street, Houston, Texas 77030, USA.

solid media. There was no distinguishing clinical feature, but both patients presented with suppurative keratitis in a previously diseased or traumatised cornea. Future improvements in microbiological evaluations, such as biochemical assays of capninae<sup>6</sup> or immunological testing,<sup>7</sup> may prove useful in the diagnosis of these infections.

In-vitro sensitivity testing of capnocytophaga strains has shown susceptibility to penicillin G, cephalosporins, clindamycin, chloramphenicol, and tetracycline but relative resistance to aminoglycosides, polymyxins, and vancomycin.<sup>8</sup> Since the in-vitro testing and clinical course of both cases of suppurative keratitis reported here showed improvement after therapy with local clindamycin, and because topical clindamycin has shown adequate corneal penetration in the experimental animal,<sup>9</sup> this antibiotic can be considered when anaerobic Gram negative bacilli are isolated from a corneal ulcer unresponsive to other antibacterial agents.

These two cases of corneal ulcers caused by an unusual micro-organism show the need to do corneal scrapings for microbiological evaluation whenever bacterial keratitis is suspected. Laboratory sensitivity testing is useful to guide the selection of alternative antimicrobial agents.

Microbiological testing was done by Nettie M Robinson of the Ocular Microbiology Laboratory, Baylor College of Medicine, Houston, Texas; and Vera Sutter from the Wadsworth Veterans Administration Hospital, Los Angeles, California.

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T. J. Roussel, M. S. Osato and K. R. Wilhelmus

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