Chronic Postoperative *Roseomonas* Endophthalmitis

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We report one case with chronic postoperative endophthalmitis caused by *Roseomonas* species. *Roseomonas* spp. induced chronic endophthalmitis, which might result in misdiagnosis and delayed treatment and causes ocular damage and severe visual loss. This report is the first one related to a case with postoperative endophthalmitis secondary to *Roseomonas* infection.

**CASE REPORT**

In April 2007, an 83-year-old woman presented to our clinic with a 2-week history of eye pain, tearing, and blurry vision in the right eye for the previous 2 weeks. In October 2006, she had undergone uncomplicated cataract surgery, with phacoemulsification and intraocular lens implantation in the right eye. On examination, her visual acuity was 20/200 in the right eye and 20/100 in the left, and she was diagnosed with acute conjunctivitis. She was started on treatment with topical 0.3% tobramycin and 0.1% dexamethasone for four times per day. On 6 June 2007, her right eye still had not improved, and her visual acuity had deteriorated to the ability to see hand motion. A slit-lamp biomicroscopic examination revealed keratic precipitates, corneal edema, and a 1-mm hypopyon in the anterior chamber. No fundal details were visible, and ocular echography demonstrated moderate vitreous opacity. She was diagnosed with chronic endophthalmitis and immediately treated with intravitreal injections of vancomycin (1 mg/0.1 ml) and ceftazidime (2.25 mg/0.1 ml). On 7 June 2007, the symptoms and signs had still not improved. Pars plana vitrectomy with intravitreal injections of vancomycin (1 mg/0.1 ml) and ceftazidime (0.4 mg/0.1 ml) was performed. She received intensive topical vancomycin (25 mg/cm², hourly), ceftazidime (25 mg/cm², hourly), and 1% prednisolone acetate (four times per day).

Microbiological cultures of aqueous and vitreous fluids were done on the day of the vitrectomy. The aqueous and vitreous specimens obtained were processed by Gram staining and inoculated onto 5% sheep blood agar, chocolate agar, eosin-methylene blue agar, and thioglycolate broth (Becton Dickinson Microbiology System, Sparks, MD). The Gram stain demonstrated moderate vitreous opacity. She was diagnosed with chronic endophthalmitis and immediately treated with intravitreal injections of vancomycin (1 mg/0.1 ml) and ceftazidime (2.25 mg/0.1 ml). On 7 June 2007, the symptoms and signs had still not improved. Pars plana vitrectomy with intravitreal injections of vancomycin (1 mg/0.1 ml) and ceftazidime (0.4 mg/0.1 ml) was performed. She received intensive topical vancomycin (25 mg/cm², hourly), ceftazidime (25 mg/cm², hourly), and 1% prednisolone acetate (four times per day).

Microbiological cultures of aqueous and vitreous fluids were done on the day of the vitrectomy. The aqueous and vitreous specimens obtained were processed by Gram staining and inoculated onto 5% sheep blood agar, chocolate agar, eosin-methylene blue agar, and thioglycolate broth (Becton Dickinson Microbiology System, Sparks, MD). The Gram stain showed gram-negative cocobacilli, with some neutrophils. After the incubation of the specimen at 36°C for 48 h under 5% CO₂, cultures grew nonfermenting gram-negative bacilli, producing pink-pigmented, raised, and mucoid colonies that were 1 to 2 mm in diameter on chocolate agar, 5% sheep blood agar, and eosin-methylene blue agar. The organism was identified as a *Roseomonas* species by conventional physiologic tests. Our isolate was oxidase negative, catalase positive, urease positive, and esculin negative and lacked absorption of long-wave UV light (14). Results of susceptibility testing using the Kirby-Bauer disk diffusion technique showed that the isolate was susceptible to amikacin, gentamicin, ciprofloxacin, imipenem, and meropenem; however, it was resistant to aztreonam, ceftazidime, cefepime, piperacillin, and piperacillin-tazobactam. As a result of the isolate’s antibiogram, therapy of the right eye was changed to intravitreal amikacin (0.25 mg/0.1 ml) and topical 0.3% ciprofloxacin. One month later, the inflammation subsided, and light perception was evident; however, the ocular echography showed retinal detachment. Three months later, the right eye was phthisical (bulbar atrophy), with no light perception.

**Discussion.** The bacterial genus *Roseomonas* was named in 1993 by Rihs et al. after they studied 42 strains of pink-pigmented, aerobic, slow-growing, gram-negative bacteria (14). *Roseomonas* species phenotypically and genotypically resemble *Methylobacterium* species but are separable from the latter by their inability to oxidize methanol and by their lack of absorption of long-wave UV light. This genus includes 10 named species: *Roseomonas aerilata*, *Roseomonas aquatica*, *Roseomonas cervicalis*, *Roseomonas fauriae*, *Roseomonas gilardi* (R. gilardi subsp. gilardi and R. gilardi subsp. rosea), *Roseomonas lacus*, *Roseomonas mucosa*, *Roseomonas terrae*, *R. stagni*, and *R. vinacea*.

Since 1993, infections caused by *Roseomonas* species have been reported in literature (1, 2, 4, 8–10, 13, 16, 17, 19, 20, 21). These organisms have been isolated from various clinical samples, including blood, urine, wound, catheter, and others. Nonfermentative gram-negative bacilli, with the exception of *Pseudomonas aeruginosa*, are typically uncommon etiologic agents of infectious endophthalmitis. Most bacteria could cause acute (less than 2 weeks) and subacute (between 2 and 6 weeks) endophthalmitis; meanwhile, chronic bacterial endophthalmitis (more than 6 weeks) such as that from *Propionibacterium acnes* infection is not common (3). Chronic bacterial endophthalmitis has been reported to be caused by some species of nonfermentative gram-negative bacilli, including *Ochrobactrum anthropi*, *Achromobacter xylosoxidans*, *Pseudomonas luteola*, *Agrobacterium radiobacter*, and *Pseudomonas oryzihabitans* (5, 11, 12, 18, 22, 23). However, there was no
previous report of bacterial endophthalmitis caused by Roseomonas species. Because the isolated Roseomonas sample was not preserved in our case, the Roseomonas sp. isolated was not differentiated into further species.

Antimicrobial susceptibility profiles have been reported, and Roseomonas strains have been reported to be susceptible to amikacin, imipenem, ciprofloxacin, and ticarcillin; however, they are far less susceptible to ceftazidime, trimethoprim-sulfamethoxazole, and ampicillin, and they are essentially not susceptible to cefazidime or cefepime (6, 8, 14). Thus, the use of expanded-spectrum cephalosporins (such as ceftazidime, cefepime) to eradicate strains has been reported to be susceptible to ceftazidime or cefepime (6, 8, 14). Thus, the use of expanded-spectrum cephalosporins (such as ceftazidime, cefepime) to eradicate Roseomonas strains would be a poor choice. Intravitreal injections of antibiotics have become commonly utilized standard treatments for infectious endophthalmitis. The current antibiotic treatment for endophthalmitis includes vancomycin for coverage of gram-positive bacteria and either cefazidime or an aminoglycoside for coverage of gram-negative bacteria (15). Because of the retinal toxicity of aminoglycosides, most ophthalmologists use ceftazidime instead of aminoglycosides for coverage of gram-negative bacteria. However, before the identification of the organism and the susceptibility test, it is impossible to know which antibiotics can eradicate the organism. As in our case, the Roseomonas isolate was not susceptible to cefazidime but was susceptible to amikacin. Although pars plana vitrectomy was performed later, intravitreal amikacin and topical ciprofloxacin could not save the vision in the patient’s right eye.

Chronic endophthalmitis is frequently misdiagnosed as acute conjunctivitis, uveitis, and glaucoma; therefore, the ophthalmologist should keep in mind the possibility of chronic endophthalmitis caused by unusual organisms, such as Roseomonas species.

In conclusion, we report one case of chronic postoperative endophthalmitis caused by Roseomonas species. Roseomonas infection induces a chronic endophthalmitis which may result in misdiagnosis and delayed treatment and which may cause ocular damage and severe visual loss.

We have no relevant financial interest in this article.

REFERENCES


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