Case Report

Post-operative endophthalmitis due to an unusual pathogen, *Comamonas testosteroni*

Ashok Kumar Reddy,¹ Somasheila I. Murthy,² Subhadra Jalali³ and Usha Gopinathan¹

Correspondence

Ashok Kumar Reddy
ashokkumar@lvpei.org

¹Jhaveri Microbiology Centre, Professor Brien Holden Eye Research Centre, Hyderabad Eye Research Foundation, L. V. Prasad Eye Institute, Hyderabad, India

²Cornea and Anterior Segment Services, L. V. Prasad Eye Institute, Kallam Anji Reddy Campus, Hyderabad, India

³Smt Kanuri Santhamma Centre for Vitreo-Retinal Diseases, L. V. Prasad Eye Institute, Hyderabad, India

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Here, we describe the first report of post-operative endophthalmitis due to *Comamonas testosteroni* in an elderly diabetic patient after complicated cataract surgery. The isolate was identified by using Mini API strips. The patient was successfully treated with intravitreal ceftazidime and oral ciprofloxacin.

Introduction

Pseudomonas testosteroni was reclassified into the new genus, *Comamonas testosteroni*, in 1987, following molecular genetic studies (Koneman *et al.*, 1997). *C. testosteroni* is a Gram-negative, non-glucose-fermenting, motile, non-spore-forming bacillus found in soil and water (Arda *et al.*, 2003). Only a few cases of human infections caused by this organism have been reported in spite of its wide environmental distribution and its capacity for colonizing intravenous lines and respiratory therapy equipment (Arda *et al.*, 2003). To the best of our knowledge, this is the first report of a case of post-operative endophthalmitis due to this organism.

Case report

An 82-year-old diabetic woman came to our hospital for cataract surgery in her left eye. She had complete visual loss in the right eye that we had managed 3 years previously following an infectious sclerokeratitis, of unknown aetiology, in a pseudophakic eye.

On examination, her visual acuity was no light perception in the right eye and the ability to count fingers up to 1 m in the left eye. Comprehensive examination of the left eye was unremarkable except for advanced senile cataracts. After control of blood sugar (150 mg%) she underwent phaco-emulsification with posterior chamber intraocular lens (IOL) implantation. Surgery was complicated by vitreous loss that needed automated vitrectomy. The next day she had mild pain. Visual acuity was examined by counting fingers. Disproportionate corneal oedema, keratic precipitates, dispersed mild hyphaema, increased anterior chamber reaction and an inflammatory pupillary membrane obscuring retinal

details were noted. There was no wound infiltrate or hypopyon. Ultrasonography revealed few echo reflective vitreous opacities and no membranes. For acute infectious endophthalmitis, vitreous biopsy was performed and intra-ocular injection of 1 mg vancomycin and 1 mg ceftazidime were given on the same day. Ciprofloxacin (oral and topical), steroids (oral and topical) and cycloplegics were given as for the standard treatment of endophthalmitis.

Direct microscopic examination of the vitreous sample revealed Gram-negative slender bacilli. Confluent growth of Gram-negative bacilli was observed on blood and chocolate agar after 48 h incubation. The colonies were subcultured onto MacConkey agar. Non-lactose fermenting colonies of 3–4 mm diameter were observed on MacConkey agar after 24 h of incubation. On further examination, the bacilli were found to be glucose non-oxidizing and motile, to be catalase- and oxidase-positive, and to exhibit negative biochemical reactions for indole production, triple-sugar iron agar, urease production and oxidative metabolism of carbohydrates. The organism was identified as *C. testosteroni* using Mini API, ID 32 GN strips (bioMérieux). The organism was sensitive to ciprofloxacin, ofloxacin, gatifloxacin, moxifloxacin, chloramphenicol and ceftazidime and resistant to amikacin, gentamicin and tobramycin.

The clinical picture was worse the next day, with visual acuity being reduced to only possible light perception. With the smear report of Gram-negative bacilli and no culture positivity, pars plana vitrectomy and explantation of the IOL was performed, along with intravitreal injection of amikacin based on our institute's endophthalmitis data (Kunimoto *et al.*, 1999). Dense membranes were noted behind the IOL, in the capsular bag and along the ciliary body, and these were removed as far as possible. The explanted materials showed no growth following culture.

Abbreviations: CNS, central nervous system; IOL, intraocular lens.

Based on the antibiotic sensitivity, on the fifth day, intravitreal ceftazidime (1 mg) and topical ceftazidime were added hourly. After 2 months, the patient's vision was 20/400 with aphakic correction. The anterior chamber showed no reaction and vitreous body was clear. There was moderate disc pallor, peripapillary collaterals and foveal epiretinal membrane, possibly as sequelae to the severe infection.

Discussion

C. testosteroni was named due to its ability to grow on media containing testosterone as a sole carbon source (Skowasch *et al.*, 2002; Horinouchi *et al.*, 2001). Twenty-four cases of *C. testosteroni* infections have so far been reported (Cooper *et al.*, 2005). Common clinical conditions reported are intra-abdominal, bloodstream, central nervous system (CNS) and urinary tract infections (Arda *et al.*, 2003; Cooper *et al.*, 2005), the organism has also been isolated from respiratory secretions of cystic fibrosis patients (Coenye *et al.*, 2002).

Though the organism survives for extended periods of time within diverse nosocomial environments, most of the reported infections by this organism are community-acquired (Cooper *et al.*, 2005). Intra-abdominal infections caused by this organism are associated with anatomical abnormalities of the gastrointestinal tract and in two cases of bloodstream infections, central venous catheter and injection drug abuse were reported as risk factors (Cooper *et al.*, 2005). In a case of CNS infection, an intravenous drug abuser with recurrent cholesteatoma developed acute purulent meningitis and infected sub-arachnoid haemorrhage due to *C. testosteroni* (Arda *et al.*, 2003; Cooper *et al.*, 2005). Urinary tract infection caused by *C. testosteroni* developed in a patient with congestive heart failure (Cooper *et al.*, 2005).

Differences have been reported in the antibiotic susceptibilities of bloodstream and intra-abdominal isolates of *C. testosteroni*. Isolates from blood were susceptible to tetracycline, trimethoprim/sulfamethoxazole, extended-spectrum penicillins and cephalosporins with mixed susceptibility patterns to ampicillin, aminoglycosides and quinolones (Cooper *et al.*, 2005). Isolates from intra-abdominal infections showed uniform susceptibility to aminoglycosides. All of the isolates were resistant to

ampicillin. However, the isolate in our case was resistant to aminoglycosides and susceptible to quinolones and ceftazidime.

In this case, risk factors for endophthalmitis included advanced age, diabetes, vitreal loss and a past ocular surface disorder in the fellow eye. Multidrug-resistant, nosocomial Gram-negative endophthalmitis, as reported here, often results in phthisis bulbi/eviscerations (Schmidt *et al.*, 1993). Effective teamwork involving vigorous surgical and medical management supported by microbiological backup helped to salvage ambulatory vision in our patient.

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