Scleral buckle infection with *Alcaligenes xylosoxidans*

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We describe a rare case of extraocular inflammation secondary to scleral buckle infection with *Alcaligenes xylosoxidans*. A 60-year-old female with a history of retinal detachment repair with open-book technique of scleral buckling presented with purulent discharge and irritation in the right eye that had begun 4 weeks earlier and had been treated ineffectively at another hospital. Conjunctival erosion with exposure of the scleral buckle was noted. The scleral buckle was removed and cultured. The explanted material grew gram-negative rod later identified as *A. xylosoxidans*. On the basis of the susceptibility test results, the patient was treated by subconjunctival injection and fortified topical ceftazidime. After 4 weeks of treatment, the infection resolved.

Key words: *Alcaligenes xylosoxidans*, conjunctivitis, scleral buckle infection

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Alcaligenes xylosoxidans (formerly *Achromobacter xylosoxidans*) is an opportunistic, aerobic, gram-negative, rod-shaped bacterium. It is found frequently in hospitals and can be transmitted by contaminated fluids.[1] Ocular infections with *A. xylosoxidans* are rare, and fewer than 30 cases have been reported. We presented an open-book technique of scleral buckling, a modified technique of scleral buckling using a narrow buckle to close a wider retinal tear.[2] Now, we report a case of open-book scleral buckle infection with *A. xylosoxidans*.

Case Report

A 60-year-old female presented with a 4-week history of foreign body sensation, mucopurulent discharge, redness, and swelling of the right eye. She had been treated by her referring eye specialist for 4 weeks. She had a past history of ocular surgery for rhegmatogenous retinal detachment in the right eye 2.5 years earlier, consisting of cryopexy and scleral buckling using the open-book technique.[2] On examination, her visual acuity was 20/50 in the right eye and 20/25 in the left eye. Severe follicular hypertrophy and mucopurulent discharge with pseudomembrane formation in the right palpebral conjunctiva were noted. Exposure of the silicone sponge of the previous implant with surrounding conjunctival erosion was evident [Fig. 1]. Examination of the fundus showed a clear view and an attached retina with good buckle support. We sampled some discharge and removed the sponge for bacterial tests. A gram stain of the specimen showed gram-negative bacilli, and the culture grew *A. xylosoxidans*. Further biochemical systems (VITEK 2 colorimetric card; from bioMérieux, Marcy l'Etoile, France) was used for identification of the nonfermentative gram-negative rod. *A. xylosoxidans* with excellent identification was also reported. Further, it was susceptible to ceftazidime but resistant to gentamicin, ampicillin, amikacin, and ciprofloxacin. We treated the patient with one subconjunctival injection of ceftazidime 100 mg/0.5 mL and topical application of fortified ceftazidime 5% (50 mg/mL) four times a day for 4 weeks, and she recovered well.

Discussion

Scleral buckling is a common procedure to repair a rhegmatogenous retinal detachment. Infection of the scleral explant is a well-recognized postoperative complication threatening the eye and jeopardizing retinal attachment and visual outcome. The reported incidence varies between 0.5% and 5.6%. The surgical technique, synthetic materials in scleral explants, duration of surgery, and size and position of buckle affect the rate of infection.[3]

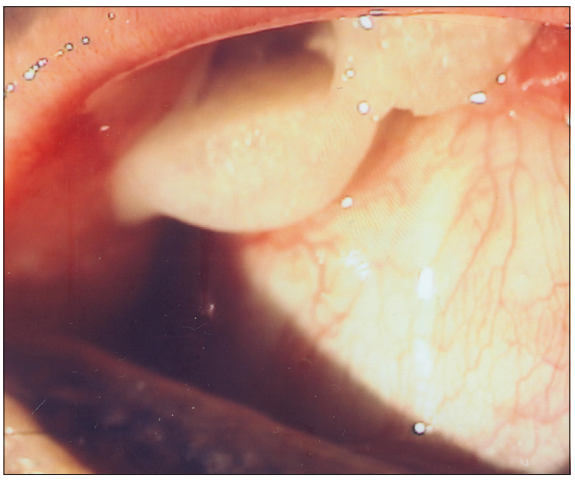

Figure 1: The silicone sponge was opened like a book and buckled onto the sclera. The raised edges may rub the conjunctiva, leading to conjunctival erosion, secondary exposure of the explant, and infection

We reported the open-book technique for closing horseshoe-shaped retinal tears of one to two times the width of available silicone sponges.[2] In this technique, an incomplete cut was made along the longitudinal axis of a silicone sponge, which then can be opened like a book and buckled onto the sclera by matrix sutures in the corresponding position of the retinal tear. During the past 3 years, we have used this technique in six eyes, and this is the first serious buckle-related complication. We speculate that an incompletely cut silicone sponge may have a tendency to close [Fig. 1]. The margin of the cut edges may rub the conjunctiva, leading to conjunctival erosion, secondary exposure of the explant, and infection. We, therefore, should smooth the edges of the four corners to avoid complications when we use this surgical method.

Most infections due to *A. xylosoxidans* have been reported to occur in immunocompromised hosts,[1] but it has also been reported in healthy individuals after occupation-related exposure.[4] Ocular infections with *A. xylosoxidans* are rare and often associated with trauma, surgery, contact lens wear, and topical corticosteroid therapy.[5] To our knowledge, this is the first *A. xylosoxidans*-induced scleral buckle infection ever reported.

Ocular infection with *A. xylosoxidans* usually induces keratitis; isolated conjunctivitis is rare.[6] It is often confused with other gram-negative organisms, particularly *Pseudomonas aeruginosa*, on bacterial culture. Because of increased resistance against a range of antimicrobial agents, *A. xylosoxidans* must be fully identified and differentiated from other gram-negative isolates from ocular infections. Corneal superinfection and ulcer may occur after an undiagnosed *A. xylosoxidans* conjunctivitis.[7] Use of topical corticosteroids to treat conjunctivitis or associated keratopathy can also predispose an already compromised cornea to develop microbial keratitis. According to the previous report,[8] excellent or very good species identification by VITEK 2 colorimetric card assays are reliable to be reported. Polymerase chain reaction also has been suggested as useful to confirm the identity of *A. xylosoxidans*.[4]

Infections with *A. xylosoxidans* do not respond to conventional antibiotic therapy, including first-generation cephalosporins, aminoglycosides, and fluoroquinolones.[4] Resistance to later-generation quinolones has been less often reported.[3] A US-based epidemiological database reports that more than 80% of *A. xylosoxidans* isolates from blood are susceptible to imipenem (92%), piperacillin (84.8%), and ceftazidime (80%).[9] According to the antimicrobial susceptibility pattern in Taiwan, *A. xylosoxidans* is usually susceptible to ceftazidime, piperacillin, and imipenem but highly resistant to ciprofloxacin and cefepime.[10] Empiric antimicrobial therapy with ceftazidime, piperacillin, or imipenem may be appropriate before the results of susceptibility testing are available, and treatment of *A. xylosoxidans* infection should be extended to 4 weeks to prevent the possibility of recurrence.[7]

In conclusion, *A. xylosoxidans* rarely induces ocular infection. Careful history taking, complete ocular examination, laboratory

tests, and proper treatment are important in cases of unusual ocular infection.

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