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Case Report

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Streptococcus Mitis Keratitis: A Case Report

Streptococcus Mitis Keratiti: Olgu Sunumu

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Abstract

Aim: To present the clinical and treatment features of a case who developed *Streptococcus mitis* keratitis and recovered with medical treatment.

Case: Sixty-six years old female patient applied to our hospital's emergency service with the complaint of an olive tree branch hitting her right eye. She had conjunctival hyperaemia, discharge, decreased vision and pain on her eye. In the ophthalmologic examination, visual acuity was measured as 0.1 on the right and 0.7 on the left eye. Biomicroscopic examination revealed a large, yellow-white keratitis center on superior cornea, hypopyon and an epithelial erosion which extended up to superior limbus. Ocular ultrasonography was normal. Corneal scraping sampling was made for direct microscopic examination and culture to determine the etiological agent.

Topical vancomycin, amikacin, fluconazole and cyclopentolate were started empirically. *Streptococcus mitis* which was sensitive to vancomycin and teicoplanin was isolated from the corneal cultures. Visual acuity was measured as 0.6, corneal opacity was detected on the superior cornea and fundus examination was normal at the third month post-treatment examination.

Conclusion: Although *Streptoccus mitis* species rarely cause ocular infection, oral hygiene and cardiological examination of the patient should also be kept in mind because of viridians group bacteria. Diagnosis is made by corneal scraping and culture. Vancomycin is a good option treatment for *Streptococcus mitis*.

Keywords: *Streptococcus mitis*, bacterial keratitis, vancomycine

Öz

Amaç: *Streptococus mitis* keratiti gelişen ve tıbbi tedavi ile iyileşen olgumuzun klinik ve tedavi özelliklerinin sunulması amaçlanmıştır.

Olgu: Altmış altı yaşında kadın hasta gözüne zeytin dalının çarpması şikayeti ile hastanemiz acil servisine başvurdu. Konjonktival hiperemi, akıntı, görmede azalma ve gözde ağrı mevcuttu. Oftalmolojik muayenede görme keskinliği sağda 0,1, solda 0,7 olarak ölçüldü. Biyomikroskopik incelemede kornea üstte büyük, sarı-beyaz keratit merkezi, hipopiyon ve superiyor limbusa kadar uzanan epitelyal erozyon saptandı. Oküler ultrasonografi normaldi. Etiyolojik ajanı belirlemek için direkt mikroskobik inceleme ve kültür için kornea kazıma örneklemesi yapıldı. Ampirik olarak topikal vankomisin, amikasin, flukonazol ve siklopentolat başlandı. Kornea kültürlerinden vankomisine ve teikoplanine duyarlı *Streptococcus mitis* izole edildi. Tedavi sonrası üçüncü ay muayenesinde görme keskinliği 0,6 olarak ölçüldü, kornea üst yarısında limbusa komşu alanda opasite saptandı ve fundus muayenesi normaldi.

Sonuç: *Streptococcus mitis* keratiti nadiren oküler enfeksiyona sebep olsa da, ağız hijyeni ve kardiyolojik muayene akılda tutulmalıdır. Tanısı korneal sürüntü ile koyulur. Topikal vankomisin tedavide etkili bir ajandır.

Anahtar sözcükler: *Streptococcus mitis*, bakteriyel keratit, vankomisin

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INTRODUCTION

Streptococcus mitis is a mesophilic alpha-haemolytic species of Streptococcus that inhabits the oral cavity. It is coccus (spherical shaped), gram-positive, catalase negative, and facultative anaerobe. It was previously classified as Streptococcus mitior. *Streptococcus mitis* is known to cause several medical conditions one of them being infective endocarditis (1,2).

Streptococcus mitis primarily resides in the oral cavity which includes the mouth, nasopharynx, and throat. However, there have also been cases of it in the female genital tract, the gastrointestinal tract, and even in the integumentary system (2,3).

It rarely causes eye infection and keratitis. In this case report we aimed to present that although *Streptococcus mitis* can rarely cause eye infection, it can lead to severe eye infection like keratitis and can even lead to blindness. So, we wanted to raise awareness about this bacterium so that people know how to treat with a patient with *Streptoccus mitis* keratitis and that this bacterium can be treated with medical treatment, without requiring any surgery.

CASE

66-year-old female patient comes to our hospital's emergency service with the complaint of an olive tree branch hitting her eye. She had conjunctival inflammation, pain and itching on her eye. She stated that an olive tree hit her eye while she was collecting olives and she had extreme eye pain and that made her come to the emergency service. Then the patient concultated to our clinic. We examined the patient and found that her visions were 0.1/0.7, her intraocular pressures were digitally normal in right eye and 15 mmHg in left eye. In her biomicroscopic examination of the right eye, we saw an epithelial opening which extended up to superior limbus with keratitis, limbal vascularisation, hypopyon, ciliary injection and dry eye. Her left eye was normal. Her fundus could not be examined so we did an ultrasonography which came out to be normal. Direct and indirect light reflexes were normal and RAPD bilaterally negative. Eye movements were free, diplopia was not described. On inspection, right eyelid oedema and right eyelid hyperaemia were present. After consultation, the patient was admitted to our clinic with a preliminary diagnosis of keratitis.

The patient had no history of systemic disease or drug use. Corneal culture was taken from the keratitis and inoculated on Chocolate agar, Eosin Methylene-blue agar and Sabouraud dextrose agar. Routine blood tests and chest X-ray were requested. After the samples were taken, treatment was started on the right eye. Fortified vancomycin 24x1, fortified amikacin 24x1, fortified fluconazole 24x1, autologous eye drops 5x1 and tropicamide 5x1 was given as medical treatment. Her routine blood tests were obtained and in her hemogram there was only leucocytosis (White Blood Cell: 12.100). Her biochemistry results were normal with slightly elevated CRP (8,23 mg/L). Her coagulation results were normal. In her serology, infective biomarkers were negative. Her chest X-ray was normal. On day 1 of her treatment, her vision dropped down to 10 CMPS, intraocular pressure was normal. In her biomicroscopic examination, corneal ulcer was 2.5x2.5 mm, corneal oedema and fibrin reaction were present (Figure 1).

Figure 1: Biomicroscobic findings of the patient at first examination: a yellow-white opacity with clearly defined margins on the cornea, hypopyon at anterior chamber

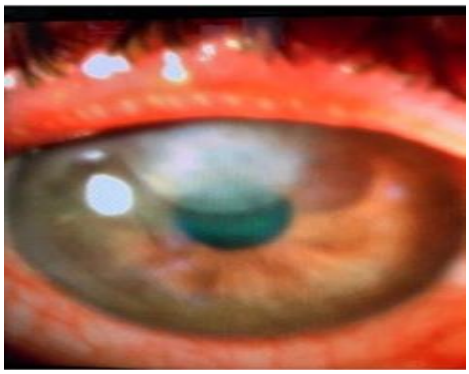
In her fundus examination, vitreous was natural with ultrasonography. On the 6th day of treatment, her vision went up to 0.05. In her biomicroscopic examination, corneal oedema was regressing, hypopyon was regressing and no fibrin was observed. In this process, the culture taken from the keratitis on the 9th day of hospitalization was concluded. Two days later, on the 11th day of hospitalization, the culture antibiogram was concluded. On the 9th day of treatment, her vision increased to 0.1. The Corneal culture was positive and *Streptococcus mitis* had grown. Antibiogram results showed high sensitivity to vancomycin and teicoplanin, and moderate sensitivity to amikacin and penicillin G. The results were consulted with the infectious diseases and clinical microbiology department.

They stated that discontinuation of fluconazole and amikacin use were deemed appropriate. Treatment was revised according to the antibiogram result and the final treatment was fortified vancomycine 12x1, autologous eye drops 5x1, tropicamide 1% eye drops 3x1, oxytetracycline hydrochloride eye ointment 2x1, oral doxycycline 2x1.

On the 20th day of treatment, her vision increased from 0.1 to 0.3. In her biomicroscopic examination the corneal infiltration was 1x1 mm and pannus formation was present. When the patient had discharged from the hospital her vision was 0.3. In her biomicroscopic examination, corneal epithelial defect closed. There was corneal opacity and scar formation extending at the border of the limbus superior to the cornea and extending to the central cornea.

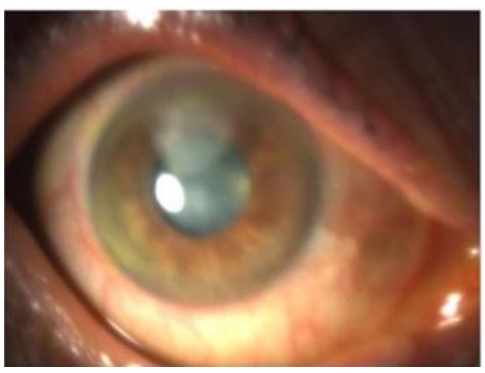
In her 1st control after discharge which was 30th day, visusal acuity was 0.4 and intraocular pressure was 12 mmHg with Goldman applanation tonometer. In her biomicroscopic examination, there was punctate epitheliopathy. There was corneal opacity and neovascularization on the superior cornea. Fundus could now be examined, and it came out to be normal. Antibiotic-containing eye drops were tapered and steroid-containing drop was added to the treatment (Figure 2). Written consent was obtained from the patient that her medical data could be published.

Figure 2: Biomicroskopic finding of the patient in the 1st month after medical treatment



In 3rd months control after discharge, her visual acuity had increased to 0.6. Her biomicroscopic examination was calm and corneal nephelion was present. Her current treatment consisted of moxifloxacin 3x1, artificail tear drop 6x1 and loteprednol 1x1 (Figure 3).

Figure 3: Biomicroscopic findings of the patients in the 3rd months after medical treatment.



DISCUSSION

Bacterial keratitis is a devastating infection of the cornea that can lead to corneal scarring and vision loss. The spectrum of pathogens in each area is influenced by its geographical location, the occupation of its residents and the presence of risk factors such the prevalence of contact lens wear (4). Yarımada et al (5). identified P. aeruginosa and Streptococcus pneumonia as the most common causative pathogens in patients with bacterial keratitis in our country. S. pneumoniae accounted for 5.5-10.77% of isolates in the world, Viridans group streptococci were implicated in 0.4–0.8% of cases (6). *Streptococcus mitis* keratitis are not a common type of keratitis. In another article, while Streptococcus pneumonia species were shown as the cause of keratitis in 12%, this rate was only 0.6% in *Streptococcus mitis* (7). Medioro et al found that *Streptococcus mitis* isolation rate was 0.5% in in corneal scrapps in patients with bacterial keratitis from January 2006 to December 2015 in their study (8).

There are case reports about *Streptococcus mitis* keratitis in the literature. In a case report, *Streptococcus mitis* keratitis developed due to contact lens use in a 39-year-old female patient. Medical treatment due to corneal ulceration developed in this patient was ineffective and the patient had to undergo keratoplasty as a last resort. Again, our patient did not have a history of contact lens use, and only nephelion developed in our patient and no surgical procedure was performed (9). In another case repeort, a 63-year-old woman developed corneal ulceration and descemetocele due to *Streptoccocus mitis*, and although she was clinically a candidate for keratoplasty, the patient had to undergo amniotic membrane transplantation. However, in our case, only nephelion developed and neither corneal ulceration nor descemetocele developed, so neither the need for amniotic membrane transplantation nor the need for keratoplasty was born in our patient (10).

Streptococcus mitis is one of the ocular infection agents that can result in blindness, such as endophthalmitis, along with keratitis. In a case report, endophthalmitis due to *Streptoccocus mitis* developed in a 3-year-old girl. However, our patient was 66 years old and the picture of endophthalmitis did not develop with the correct, aggressive and rapid treatment (11). In another case report, a 75-year-old male patient develops endophthalmitis due to *Streptoccocus mitis* after cataract surgery, and vitrectomy, panretinal photocoagulation and silicon injection are performed to treat this patient. However, in our patient, *Streptoccocus mitis* developed due to branch strike and our patient recovered without any surgical intervention (12). Jaffry et al. reported that unique case of an immunocompromised patient with rheumatoid arthritis, severe dry eye, and a history of multiple

episodes of keratolysis, who developed a corneal ulcer from *Streptococcus mitis* (13). As in our case, they treated corneal ulser with fortified vancomycine and artificial tears.

CONCLUSION

In treatment of the streptococcal keratitis, knowing the antibiotic sensitivity patterns is critical in choosing appropriate empirical antibiotics and optimizing patient outcomes. We started empirically fortified voncomycine, amikacin and fluconazole treatment before the culture result was obtained. We regularly consulted the patient with infectious diseases and revised her treatment accordingly. We stopped the patient's unnecessary drugs as soon as the results of the culture were found and increased the dose of the required drug for maximum effect. Our case of *Streptoccocus mitis* keratitis attracts attention compared to other cases in the literature, as it resulted visually well with the medical treatment.

In conclusion, although *Streptoccus mitis* species rarely cause ocular infection, oral hygiene and cardiological examination of the patient should also be kept in mind because of viridians group bacteria. Diagnosis is made by corneal scraping and culture. First-line therapy is topical vancomycin. *Streptococcus mitis* keratitis which responds very well to treatment should always be in our minds.

Author Contribution

The author declare no conflict of interest.

The author disclose that no grants or support resources were used.

The author approved the final version of the manuscript.

The author declared that this manuscript has not been published before and is not currently being considered for publication elsewhere.

Written consent was obtained from the patient that her medical data could be published.

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