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Professional paper

Trichophyton Spp. Fungal Keratitis in 22 Years Old Female Contact Lenses Wearer

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A B S T R A C T

Fungal keratitis represents one of the most difficult forms of microbial keratitis to diagnose and treat successfully. It is difficult to obtain correct diagnosis and topical antifungal preparations. Fungi can cause severe stromal necrosis and enter the anterior chamber by penetrating an intact Descemet membrane. The most common pathogens are filamentous fungi (Aspergillus and Fusarium spp.) and Candida albicans. The incidence of Trichophyton spp. keratitis is 5%. A 22 years old female contact lenses wearer after keratitis developed corneal melting syndrome, spontaneous perforation of the cornea and complicated cataract of the left eye. Conjunctival swab was sterile as well as first sample of corneal tissue and sample from the anterior chamber. Urgent therapeutic perforating keratoplasty (PK), was performed together with extracapsular cataract extraction and the implantation of the intraocular lens in the posterior chamber. The patient was treated with ciprofloxacin and diflucan (systemic therapy); with dexamethason and atropin (subconjunctivaly) and chlorhexidine, brolene, levofloxacin, polimyxin B, and dexamethason/neomycin (topically). Microbiology evaluation was performed once again following excisional biopsy of the intracameral portion of the lesion. The presence of Trichophyton spp. was finally confirmed. Itraconazole and garamycin were included in the systemic therapy. Corneal graft was clear for 17 days but decompesated 28 days after the PK. After two weeks microorganisms invaded the vitreous and caused endophthalmitis. Despite urgent pars plana vitrectomy patient developed endophthalmitis, lost light sensation and developed phthysis. Evisceration and the implantation of silicon prosthesis was done. Perforating keratoplasty is a method of choice in treating severe infectious keratitis unresponsive to conservative tretment but without the eradication of microorganisms it cannot restore the vision or save the eye. Trichophyton spp. may cause a severe disease of the anterior and posterior part of the eye which may finish with the lost of vision/eye. Prompt diagnosis and treatment of Trichophyton spp. keratitis are essential for a good visual outcome.

Abbreviations: *PK – perforating keratoplasty, PTK – phototherapeutic keratectomy*

Key words: *fungal keratitis, corneal melting syndrome, therapeutic keratoplasty, Trychophyton spp., endophthalmitis*

Introduction

Fungal infection of the anterior eye segment is rare, but represents one of the most difficult forms of microbial keratitis and very often may have devastating effects[1]. Difficulties arise in making the right diagnosis due to various clinical charasteristics of fungal keratitis[2,3]. It is not easy to get confirmation from the microbiology laboratory and to obtain topical antifungal preparations, as they are not as advanced as antibiotics for bacterial infections[4,5]. For that reasones infection is usually more advanced because of delay in making the right diagnosis[6].

Fungi are ubiquitous, primitive organisms and part of normal external ocular flora (isolated in 3% to 28 % from the conjunctival sac of healthy eyes). Some fungi are unicellular, but most form filaments of vegetative cells known as mycelia. They reproduce by fragmentation, fission and asexual spore formation. The most common pathogens are filamentous fungi (*Aspergillus*, *Fusarium*) and *Candida albicans* and the incidence vary worldwide. Some of them are cosmopolit but some can be endemic to some districts[7,8].

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Fungal keratitis is usually developed in association with preexisting corneal disease or in an immunocompromised patient. Fungi gain access into the corneal stroma through defect in the epithelial layer. Trauma is the most frequent risk factor. Some cases of the contact lens wearers are associated with fungal keratitis. Extended use of topical corticosteroides can activate and increase virulence of the fungi[9,10].

If they are embaded in the stroma, fungi can cause severe stromal necrosis and enter the anterior chamber by penetrating an intact Descemet membrane. Once in the anterior chamber, the infection is very difficult to control, partly due to the poor penetration of antimycotic agents[11,12].

Case Report

We present 22 years old female who developed corneal ulcer after contact lens wear. Patient was treated with topical antibiotics, conjunctival swab was sterile but patient developed corneal melting syndrome. She was continuously treated with topical and systemic antibiotics for two weeks but then developed descemetocella with spontaneous corneal perforation and complicated cataract of the left eye as a complication of keratitis.

At that stage of disease patient was examined in our clinic for the second opinion (Figure 1). Immediately after she was admitted in our clinic, conjunctival swab, a piece of corneal tissue and the sample from the anterior chamber were sent to microbiology department. During the procedure lavage of the anterior chamber with cefuroxim and vancomycin was performed. Therapeutic urgent perforating keratoplasty (PK) was performed 48 hours after she was admitted in our clinic by placing the graft onto healthy recipient part of cornea together with extracapsular cataract extraction and the implantation of the intraocular lens in the posterior chamber (Figure 2). Intraoperatively we found melted cornea, descemetocella with central perforation, white-yellow snow balls in the anterior chamber with thick pupilary membrane.

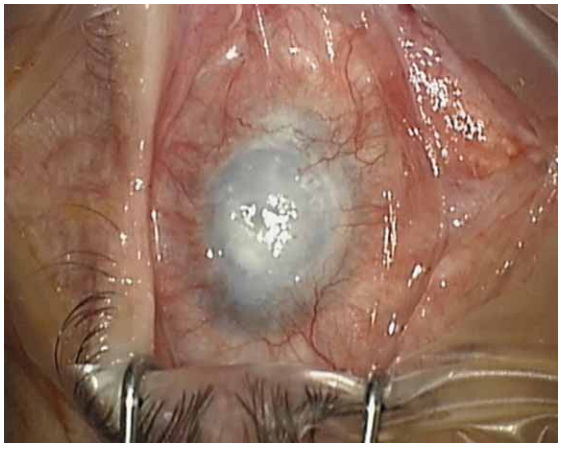

Fig.1. Trichophyton infected eye before perforating keratoplasty (PK)

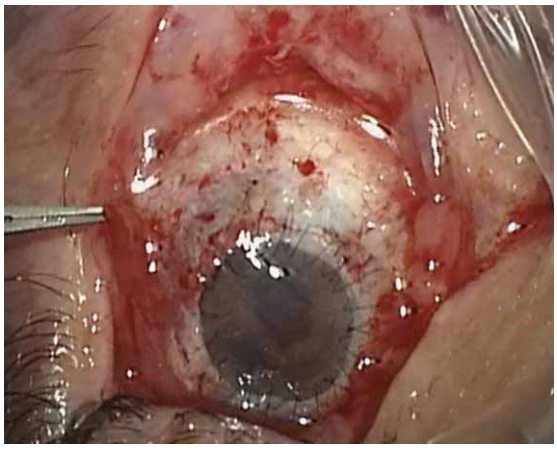

Fig. 2. Trichophyton infected eye after perforating keratoplasty (PK)

Patient was treated with 400 mg i.v. ciprofloxacin and 50 mg diflucan dexamethason and atropin (subconjunctivaly) and chlorhexidine, brolene, levofloxacin, polimyxin B, and dexamethason/neomycin drops.

Microbiology evaluation was performed following excisional biopsy of the intracameral portion of the lesion. The presence of *Trichophyton spp*. was confirmed. According to the infectologists advice 100 mg bid itraconazole was included in the systemic therapy. Corneal graft was clear for 17 days then started to opacify, and was rejected in following 10 days. In spite of local and systemic therapy, microorganisms invaded the vitreous and caused endophthalmitis. Pars plana vitrectomy was performed in order to take fresh samples and decrease the quantity of microorganisms. In postoperative period antifungal treatment was continued intensively together with 240 mg i.v. Garamycin. Despite the intensive therapy corneal graft gradually melted and anterior chamber was again full with inflammation masses. Anterior chamber washout with cefuroxim was once again done and samples were taken and sent to evaluation. *Trichophyton spp*. was confirmed but in decreased quantity. Due to progression of corneal melting amniotic membrane was transplanted to prevent perforation. Inspite systemic and local therapy patient developed endophthalmitis again and lost the light sensation. Few months afterwards she developed phthysis. Evisceration with drainage system was performed and the implantation of silicon prosthesis was done.

Discussion and Conclusion

Trychophyton spp. is a rare cause of fungal keratitis which can be associated with progressive keratolysis and corneal perforation[13]. Severe disease of the anterior eye segment can extend to the posterior pole with endophthalmitis and consequent can often end with the lost of vision or even eye. Treatment can be medicamentous or surgical. There are several guidelines for the antifungal medicamentous treatment, but efficacy of cur-

rently available antifungal agents is limited and there is a relatively high medical treatment failure rate[14,15,16]. Daily „debridment« with the spatula or blade is the simplest form of surgical intervention and is very helpfull by debulking organisms and necrotoc material and by enchancing the penetration of the topical antifungal therapy[17]. Excimer laser Phototherapeutic Keratectomy (PTK) can be used for treating superficial infections. The most often of surgical procedure is therapeutic penetrating keratoplasty. Keratoplasty is a method of choice when medical treatment failed or in the cases of recurrent infection[18,19]. It is wise to perform keratoplasty before infectious process progress into anterior chamber or before limbus or sclera are involved. The size of trephination should be planned to leave at least 1 to 1.5 mm clear zone of clinically uninvolved cornea[20]. Interrupted sutures should be used[21]. Every affected intraocular structures (lens, iris, vitreous) should be excised and irrigation performed. If endophthalmitis is suspected antifungal agents should be injected intraoculary. After perforating keratoplasty topical antifungal agents shold be continued in combination with systemic antifungal therapy. Prompt diagnosis and treatment of fungal infection (in our case Trichophyton keratitis) is crucial for preservation of an eye for a good visual outcome[22].

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GLJIVIČNI KERATITIS (*TRICHOPHYTON SPP.*) KAO KOMPLIKACIJA NOŠENJA KONTAKTNIH LEĆA

SAŽETAK

Gljivični keratitis predstavlja jedan od najtežih oblika keratitisa kako za postavljanje dijagnoze tako i za uspješno liječenje. Gljivične infekcije često uzrokuju teške nekroze strome rožnice i prodiru u prednju očnu sobicu kroz intaktnu Descemetovu membranu. Nakon što je uzročnik jednom prodro u prednju očnu sobicu teško je kontrolirati daljnji tijek infekcije djelomično i zbog otežane penetracije antimikrobnih lijekova. Najčešći uzročnici su filamentozni fungi (Aspergillus i Fusarium spp.) i Candida albicans. Incidencija keratitisa uzrokovanog Trychophytonom spp. je 5%. Kod 22 godišnje djevojke koja je nosila meke kontaktne leće nakon keratitisa se razvio melting sindrom sa spontanom perforacijom rožnice i kompliciranom kataraktom lijevog oka pri čemu je bris spojnice bio sterilan. Uzorak tkiva rožnice i sadržaj iz prednje očne sobice uzeti prilikom ispiranja prednje očne sobice cefuroximom i vankomycinom također su bili sterilni. Nakon toga je učinjena hitna terapeutska keratoplastika (KPP) zajedno sa ekstrakapsularnom ekstrakcijom leće (ECCE) i implantacijom intraokularne leće (IOL) u stražnju očnu sobicu. Pacijentca je sistemski liječena ciprofloxacinom i difulcanom, dexamethasonom i atropinom subkonjuktivalno, a lokalno sa Chlorhexidinom, Brolenom, levofloxacinom, polimyxinom B i dexanmethason/neomycinom. Ponovljeno je mikrobiološko testiranje intrakameralnog dijela lezije čime je potvrđena infekcija Trychophytonom sp. Nakon toga je uveden itraconazole u sistemsku th. 17 dana nakon operacije transplantat je izgubio prozirnost, a 28 dana nakon operacije došlo je do dekompenzacije presađene rožnice. 2 tjedna nakon operacije uzročnik je prodro u prednji vitreus i uzrokovao endoftalmitis. Unatoč hitnoj pars plana vitrektomiji kod pacijentice se razvio endoftalmitis sa gubitkom osjeta svjetla i nastankom ftize. Učinjena je evisceracija i implantacija silikonske kuglice. KPP je metoda izbora u liječenju teških infektivnih keratitisa koji ne

reagiraju na konzervativnu terapiju, no bez eradikacije uzročnika neće doći do oporavka vida i očuvanja integriteta oka. Trichophyton može uzrokovati teške bolesti prednjeg i stražnjeg segmenta oka sa posljedičnim gubitkom vida i konačno samoga oka. Rana dijagnostika i liječenje keratitisa uzrokovanog Trichophytonom od iznimne je važnosti za oporavak vida.