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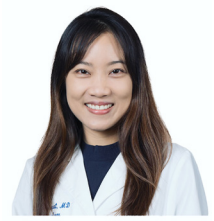
Case Report

An Unusual Presentation of Microsporidial Keratitis as Iritis without Corneal Lesion: A Case Report

รายงานผู้ป่วยกระจกตาติดเชื้อจากเชื้อไมโครสปอริเดียที่มาด้วยอาการนำของม่านตาอักเสบโดยไม่มีรอยโรคที่กระจกตา



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Abstract

Objective: To describe a case of microsporidial keratitis presented with iritis without corneal infiltration mimicking herpes infection.

Case presentation: A 61-year-old woman presented with acute red eye with inflammatory reaction and keratic precipitates in her right eye. There was no corneal infiltration. She was diagnosed with iritis and treated with topical steroid. The inflammation recurred and stromal infiltration developed. Herpes keratouveitis was the most suspected cause. After ten months of treatment, steroid drops and antiviral medication could not control the inflammation. The diagnostic polymerase chain reaction was done twice, and the result showed negative for herpesviruses. Corneal biopsy was performed. The result revealed the diagnosis of microsporidial stromal keratitis. Therapeutic penetrating keratoplasty was later performed. Numerous acid-fast oval bodies were demonstrated in corneal button, confirming the diagnosis.

Conclusions: Iritis could be the initial manifestation before stromal infiltration develops in microsporidial stromal keratitis, mimicking herpes etiology. Aqeous PCR and corneal biopsy should be performed in recalcitrant cases.

Keywords: stromal keratitis, microsporidia, iritis, atypical presentation, therapeutic keratoplasty

The authors report no conflict of interest.

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บทคัดย่อ

รายงานผู้ป่วยกระจกตาติดเชื้อจากเชื้อไมโครสปอริเดียที่มาด้วยอาการนำของม่านตาอักเสบโดยไม่มีรอยโรคที่กระจกตา

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วัตถุประสงค์: เพื่อรายงานเคสผู้ป่วยกระจกตาติดเชื้อจากเชื้อไมโครสปอริเดียที่มาด้วยอาการนำของม่านตาอักเสบ โดยไม่มีรอยโรคที่กระจกตา คล้ายการติดเชื้อไวรัสกลุ่มเฮอร์ปีส์

รายงานผู้ป่วย: ผู้ป่วยหญิงอายุ 61 ปี มาด้วยตาแดงเฉียบพลันตาขวา ร่วมกับตรวจพบการอักเสบในช่องหน้าลูกตา โดยไม่พบการอักเสบที่กระจกตา ผู้ป่วยได้รับการวินิจฉัยเป็นม่านตาอักเสบและได้รับการรักษาด้วยยาหยอดตาสเตรียรอยด์ ต่อมาการอักเสบกลับเป็นซ้ำและเริ่มมีการอักเสบที่กระจกตาร่วมด้วย จึงสงสัยภาวะกระจกตาอักเสบร่วมกับม่านตาอักเสบจากการติดเชื้อไวรัสกลุ่มเฮอร์ปีส์มากที่สุด หลังจากได้รับการรักษาด้วยยาหยอดตาสเตรียรอยด์และยาต้านไวรัสเป็นเวลาสิบเดือน การอักเสบไม่สามารถควบคุมได้ ผู้ป่วยได้รับการเจาะน้ำในช่องหน้าลูกตาเพื่อตรวจโพลีเมอร์เรสเชนรีแอคชั่นสองครั้งเพื่อหาเชื้อไวรัสกลุ่มเฮอร์ปีส์ ซึ่งให้ผลไม่พบเชื้อ ผู้ป่วยได้รับการตัดชิ้นเนื้อกระจกตาเพื่อส่งตรวจ พบการติดเชื้อไมโครสปอริเดียที่กระจกตาชั้นสโตรมา ผู้ป่วยจึงได้รับการรักษาด้วยการผ่าตัดเปลี่ยนกระจกตา ผลชิ้นเนื้อจากกระจกตาของผู้ป่วยพบลักษณะรูปร่างวงรีติดสีแอสิดฟาสต์จำนวนมาก ซึ่งเป็นลักษณะของเชื้อไมโครสปอริเดีย ช่วยยืนยันการวินิจฉัย

สรุป: ผู้ป่วยกระจกตาอักเสบจากเชื้อไมโครสปอริเดียอาจมาด้วยอาการนำของม่านตาอักเสบก่อนที่จะมีกระจกตาอักเสบตามมา คล้ายการติดเชื้อไวรัสกลุ่มเฮอร์ปีส์ ควรทำการตรวจน้ำในช่องหน้าลูกตาและตัดชิ้นเนื้อกระจกตาส่งตรวจในกรณีที่ไม่ตอบสนองต่อการรักษา

คำสำคัญ: stromal keratitis, microsporidia, iritis, atypical presentation, therapeutic keratoplasty

Introduction

Microsporidia are obligate intracellular parasites. They were thought to be “Protozoan” but genetic studies indicate that they are highly defined “fungal” organisms.[1] The first identified microsporidia were found infecting silkworms. They are known to infect fish, birds, insects, and even humans.[2] Microsporidia only grow inside a host organism’s cells, making them more difficult to study than other pathogens, unlike most bacteria, which can be grown in a petri dish and manipulated. Microsporidia can infect gastrointestinal, sinus, pulmonary, muscular, renal, central nervous, and ocular systems.[3] Ocular involvement affects mostly the cornea and conjunctiva in both healthy and immunocompromised individuals. Microsporidial keratitis has been described as having two distinct clinical features, which are superficial keratoconjunctivitis and deep stromal keratitis. Herein, we report a case of microsporidia stromal keratitis that presented with recurrent iritis without corneal infiltration mimicking herpes infection.

Case Report

A 61-year-old healthy woman presented with acute red eye and foreign body sensation in her right eye for 3 days. The best-corrected visual acuity was 20/20. Slit lamp examination showed 0.5 plus cell without flare (according to the Standardization of Uveitis Nomenclature criteria). Few fine stellate keratic precipitates (KPs) were found. There was definitely

no infiltration on the cornea. The iris and intraocular pressure were normal. No history of herpetic infection, ocular trauma or surgery, and other ocular problems were stated. She was diagnosed with acute iritis in her right eye and treated with topical steroid. After tapering the drops, the inflammation recurred. Viral etiology was suspected due to fine diffuse stellate KPs, corneal hypoesthesia, and rapid recurrence with sole steroid treatment. Paracentesis was done for diagnostic polymerase chain reaction (PCR) and the result showed negative for five viral organisms, including herpes simplex virus type1 (HSV-1), herpes simplex virus type 2 (HSV-2), varicella zoster virus (VZV), cytomegalovirus (CMV), and Epstein-Barr virus (EBV). Despite the negative result, herpes was still the most suspicious cause, so oral antiviral medication was prescribed along with topical steroid. Patient received acyclovir 400 milligrams administered five times a day for ten days. The inflammation subsided gradually, but one month later, infiltration developed. Slit lamp examination revealed eccentric interstitial whitening in the anterior stroma of right cornea, three millimeters in size combined with coarse punctate epithelial lesions and minimal filamentary keratitis. Furthermore, intraocular pressure was elevated. Herpes stromal keratitis was suspected. She was treated with oral antiviral medication with topical steroid. Antiviral prophylaxis was recommended due to multiple recurrences of keratouveitis.

After ten months of waxing and waning symptoms, topical steroid and antiviral medication could not control the inflammation in her right eye. Eccentric greyish white infiltration increased in size and depth to full thickness of corneal stroma in the absence of epithelial ulceration (Figure 1). Diffuse fine KPs turned to large central KPs. She had aggressive irritation, pain, and tearing. PCR was repeated, and the result showed negative again. At this time, microsporidial stromal keratitis was suspected, and corneal biopsy was performed. The modified acid-fast staining of corneal tissue revealed some small oval-shaped organisms which were compatible with microsporidia. The patient was then diagnosed with microsporidial stromal keratitis and treated with topical moxifloxacin and oral albendazole. Due to poor response to medical treatment, she underwent therapeutic penetrating keratoplasty. Numerous intracellular and extracellular acid-fast oval bodies, measuring 1-3 micron were demonstrated

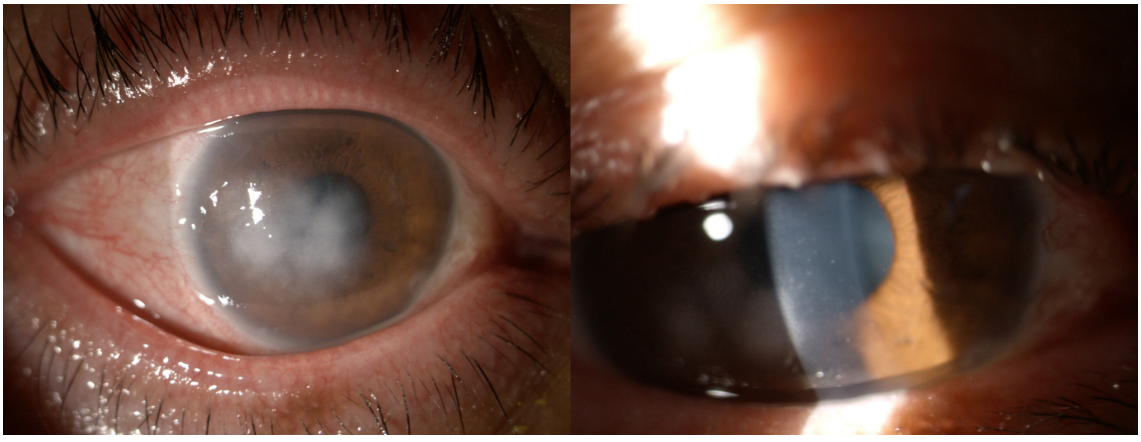

Figure1 Deep stromal infiltration developed after iritis.

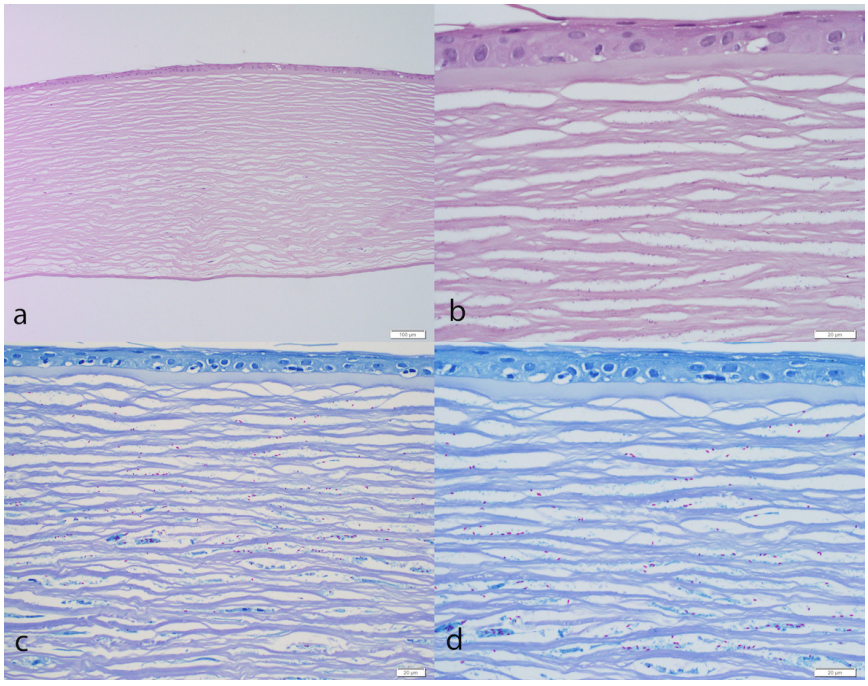

Figure 2 H&E and modified AFB staining showed oval bodies in corneal stroma; a) H&E 100X; b) H&E 600X; c) mAFB 400X; d) mAFB 600X

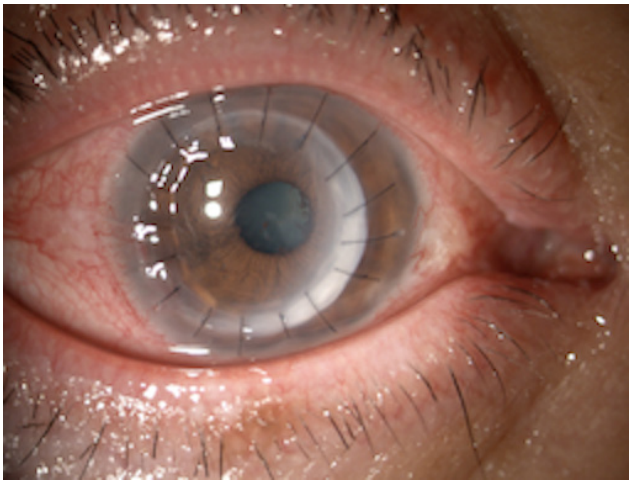

Figure 3 Post therapeutic keratoplasty (eccentric graft)

by modified acid-fast staining of the corneal button (Figure 2), and a few numbers of the organism were identified by Gomori methenamine silver (GMS) stain, confirming the diagnosis of microsporidial infection. After keratoplasty, she received topical moxifloxacin and topical steroid. The corneal graft was clear, no recurrence of infection and inflammation was noted after six months follow-up, and her visual acuity was 20/100 compared to hand motion prior to surgery. (Figure 3)

Discussion

Ocular microsporidial infection has been mainly reported to occur in two distinctive clinical features: superficial keratoconjunctivitis and deep stromal keratitis, depending on patient's immune status. Superficial keratoconjunctivitis or epithelial keratitis is mostly seen in immunocompromised or AIDS patients.4 Patients may have disseminated microsporidiosis in other systems. However, this condition is increasingly reported in healthy individuals. This form is commonly associated with Encephalitozoon genus. Microsporidia were confined to the superficial epithelial cells of the conjunctiva or cornea, associated with an inflammatory infiltrate composed mostly of neutrophils and mononuclear cells. The inflammatory reaction

was generally mild or even absent. Stromal form is more common in immunocompetent individuals. It is associated with Nosema and Vittaforma genus. Microsporidia were found deep in the corneal stroma with spores contained within the phagocytic cells and lying freely between the fibrous layers of corneal lamellae, and a marked inflammatory reaction, including mononuclear, neutrophil, and epitheloid infiltration, was present.[3] Sclerouveitis and endophthalmitis caused by microsporidia have also been reported in the literature.[5-7]

Microsporidia are commonly found in air, water, and soil. The risk factors of infection include immunocompromised status, topical corticosteroids use, wearing of contact lenses, history of trauma with dust and insect bites, soil or mud exposure, and animal exposure.8 Ocular infection could be caused by direct inoculation of transmission spores into the eye structures or by systemic propagation in immunocompromised patients with disseminated infection. As revealed in the patient's history, she stated that she works as a herder. She may have been exposed to microsporidia and microsporidial spores through contact with chickens in her farm, their body fluids, their infected waste, or their living environment.

The pathogenesis of microsporidial infection is not fully understood. The different host-parasite interactions may be observed depending on the microsporidial species and the competence of the immune response. In this case, the microsporidial infection should be acquired via environmental contamination through the cornea but the infection site might be deep in the corneal stroma or in the endothelial level that the corneal lesion could not be observed during the slit lamp examination. Confocal microscopy may have a role in identifying the change.[9] The reason why the iritis occurred instead of keratitis is not exactly known. The authors hypothesized that the inflammatory reaction in anterior chamber could be caused by a deep stromal infection which induced the inflammatory response in the anterior chamber before the cornea and topical steroid might defer the corneal infiltration. The iritis in this patient may be the early presentation or one of the entities of deep stromal infection, which microsporidia were found in the deep corneal stroma, and inflammation can occur without overlying epithelial defect. The other hypothesis is the coexistence of herpes simplex virus infection in microsporidial stromal keratitis.[10]

The large series of 124 patients with microsporidia keratitis in Singapore revealed the clinical features of the cases. Most of the cases are superficial keratoconjunctivitis. The pattern of keratitis was multiple, coarse, punctate epithelial lesions varying in number and location. They also reported the unusual findings, central corneal edema with KPs, and mild anterior uveitis in 26 cases, and limbitis in 3 eyes. These features occurred after initial monotherapy with topical fluoroquinolones, so the authors postulated that they are secondary immune-related endotheliitis after initiation of treatment.[11] Contrary to our case, the patient had anterior chamber reaction and KPs as the initial manifestations for many months before infiltration developed on the cornea.

Microsporidial keratitis can present with different clinical patterns. The previous description of two clinical features may no longer be accurate. The difference in clinical patterns may depend on microsporidial species beside host immune status. However, species identification was not investigated in this case because

of limited laboratory test facilities in our center.

Conclusion

Iritis could be the initial manifestation before stromal infiltration develops in microsporidial stromal keratitis, mimicking herpes etiology. The ophthalmologist should include the microsporidia in the differential diagnosis of keratouveitis. Diagnostic PCR and corneal biopsy should be performed in recalcitrant cases. Early surgical intervention should be considered.

Acknowledgement

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Disclosure of interest

The authors report no conflicts of interest.

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