T Treating the Problem: Fungal Keratitis

Stay up-to-date on the current treatment regimens and future therapies for fungal keratitis infection.

As we follow up on last month’s column, “Fungal Keratitis: The Lessons Learned,” (November/December 2011, Review of Cornea & Contact Lenses), we realize that it is important to practice what we preach. Fungal keratitis is a condition that cannot and should not be taken lightly—left untreated, the infection may lead to permanent vision loss. Because the infection is so fast acting, even in cases that are accurately diagnosed and treated, many patients may even need a therapeutic penetrating keratoplasty. This column will present an overview of the current treatment regimens and highlight possible future therapies for the infectious disease.

Awareness is Key

Although optometrists may not necessarily be the primary eye care provider treating the fungal infection, how to prevent the disease from occurring by being aware of a patient’s lifestyle, especially in more tropical or humid climates, can play an eye-saving role in the case against fungal keratitis. Fungal keratitis is often treated by cornea specialists at tertiary care centers and eye institutes that have the ability to perform cultures and employ other diagnostic tools to test for fungal keratitis, such as confocal microscopy. However, many patients in rural areas or in lower income populations may not have access to a cornea specialist; therefore, an optometrist’s knowledge and suspicion of the disease is of crucial importance, as they may be the first to diagnose the condition. Given that fungal keratitis cases usually occur within the contact lens-wearing population, the optometrist plays a significant role as more than 80 percent of contact lens wearers go to an optometrist for their eye care. Clinicians evaluating contact lens users with signs of fungal keratitis should look for a cornea that appears dull-gray; a heaping of the epithelium; a dry, rough texture; and a feathery, branching pattern. If an optometrist suspects fungal keratitis, they should advise their patient to discontinue contact lens wear immediately, and refer the patient to an ophthalmologist if appropriate. Knowing when to refer a patient to an ophthalmologist or corneal specialist is an important weapon in an optometrist’s arsenal, as well as an awareness of the scope of available treatments.

Ordinarily, it is quite rare for fungi to invade and damage a healthy eye. But when fungal eye infections do occur, it can be sight threatening. Early diagnosis is essential for the successful treatment of fungal keratitis. The importance of early identification must be stressed; treatment has proven to be most effective if aggressively administered in the early stages of infection.

Current Treatment

Suspicion is one, if not the most, important aspect of treatment and prevention. All clinicians should be especially observant in contact lens wearers. Being slow to identify and treat the disease can drastically worsen the patient’s condition. For fungal keratitis cases, systemic and topical steroids should be avoided until it is absolute that the pathogen has receded. In today’s market, natamycin 5% is the only commercially available topical agent indicated for the treatment of fungal keratitis, and has been popularly used for filamentous fungi infections. However, there are other therapeutic treatments that include both topical and oral anti-fungal medications. The two most commonly prescribed antifungal treatments are amphotericin B, which is usually used primarily to treat Candida pathogens. In addition, flucytosine can be an alternate treatment, used in conjunction with amphotericin B or miconazole.
More recently, however, studies have shown that triazoles—and more specifically voriconazole, a broad-spectrum antifungal agent effective against yeasts and molds—may be more effective than natamycin and amphotericin B against fungi. A recent study combining injected and topical voriconazole showed effectiveness in combating infection in patients with Fusarium keratitis. The case series involved three patients who presented with recalcitrant Fusarium fungal keratitis, and a voriconazole solution was administered to each patient via intrastromal injection as well as 5% topical natamycin hourly and oral ketoconazole twice per day. A significant reduction in the size of the Fusarium infiltration was noted in two of the patients.

The Future of Treatment

Antifungal drugs may often have poor corneal penetration, as they are routinely administered on an hourly basis for weeks at a time, day and night. This can vastly increase non-compliance, a factor that, as mentioned above, is crucial in the steps to fight fungal infection. However, emerging new therapies aim to change that aspect: one new technology is a contact lens that elutes econazole, an antifungal medication of the imidazole class. The lens is designed to treat and prevent fungal ocular infections and results showed that the release of 16mg of econazole killed 100% of fungi for 21 days. An antifungal contact lens provides a one-two punch by reducing the treatment burden in addition to increasing patient compliance. An econazole-eluting contact lens would expand an ophthalmologist’s toolbox for treating fungal keratitis, and would follow suit with the new wave of combination contact lens and drug treatment, such as the K-lens, a ketotifen-eluting contact lens, though, like the antifungal lenses, are yet to be FDA-approved.

Having a wealth of knowledge concerning disease prevention, identification, and consecutive treatment is of invaluable importance to an eye care practitioner. Optometrists should periodically educate themselves on various diseases, no matter how rare. Furthermore, cases of Fusarium keratitis should be reported to state and local health departments or directly to the Centers for Disease Control and Prevention at 800-893-0485.

References: