



From Infection to Recovery: Fungal Ulcer Treatment with Natamycin
De la Infección a la Recuperación: Tratamiento de Úlcera Fúngica con Natamicina

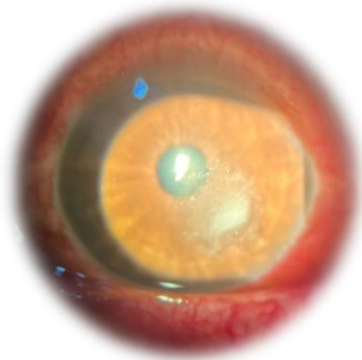
De l'infection à la guérison: traitement de l'ulcère fongique à la Natamycine

Da infecção à recuperação: tratamento de úlceras fúngicas com natamicina

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Patient's anterior segment (AS)

ABSTRACT

Fungal corneal ulcers have a higher prevalence among individuals who work in the fields and affect people in their productive working years, having a significant economic impact in third-world countries. Therefore, proper and rapid diagnosis and treatment are of utmost importance to promote the prevention of blindness caused by infectious diseases. For a fungal corneal ulcer to develop, an abrasion of the normal ocular barrier must exist. Any fungus can cause an eye infection, the most common being filamentous fungi and yeasts. Clinical manifestations typically appear 1 to 3 days after

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the injury, characterized by grayish-white infiltrates with a rough texture, irregular and feathery borders, extension into the stroma, satellite infiltrates, sometimes hypopyon, purulent discharge, anterior chamber inflammation, and micro abscesses. The only antifungal for ocular use is natamycin; However, this medication is scarce in Central America despite being 90% effective for fungal ulcers. Thanks to donations from American doctors, this drug was available to make this research possible.

Keywords: Eye; Ulcer; Filamentous Fungi; Natamycin; Vegetable; Trauma; Anterior Chamber; Blindness; Inflammation; Signs and Symptoms.

RESUMEN

Las úlceras corneales fúngicas tienen una mayor prevalencia en personas que trabajan en el campo y afectan a individuos en edad productiva laboral, por lo que tienen un gran impacto a nivel económico en los países tercermundistas. Es por esto de suma importancia un diagnóstico y tratamiento adecuado y rápido, para promover la prevención contra la ceguera causada por enfermedades infecciosas. Para que exista el desarrollo de una úlcera corneal fúngica tiene que existir una abrasión de la barrera normal ocular. Cualquier tipo de hongo puede causar una infección a nivel del ojo, los más comunes son los hongos filamentosos y las levaduras. Dentro de las manifestaciones clínicas suelen aparecer signos y síntomas 1 a 3 días después de la injuria, que se caracterizan por infiltrados blancos grisáceos, con una textura rugosa, bordes irregulares y plumosos; se puede extender hasta el estroma, infiltrados satélites, en ocasiones hipopión, secreción purulenta, inflamación de cámara anterior y micro abscesos. El único antifúngico de uso ocular es la Natamicina, sin embargo, en Centroamérica se carece de este medicamento, que representa el 90% de efectividad para las úlceras fúngicas. Gracias a donaciones de médicos norteamericanos se contó con este fármaco, lo cual hizo posible esta investigación.

Palabras claves: Ojo; Úlcera; Hongos Filamentosos; Natamicina; Vegetal; Trauma; Cámara Anterior; Ceguera; Inflamación; Signos y Síntomas.

RÉSUMÉ

Les ulcères fongiques de la cornée ont une prévalence plus élevée chez les personnes qui travaillent dans les champs et affectent les individus en âge de travailler productivement, c'est pourquoi ils ont un impact économique important dans les pays du tiers monde. Un diagnostic et un traitement adéquats et rapides sont de la plus haute importance pour promouvoir la prévention contre la cécité causée par des maladies infectieuses. Pour qu'un ulcère cornéen fongique se développe, il doit y avoir une abrasion de la barrière oculaire normale. Tout type de champignon peut provoquer une infection oculaire, les plus courants étant les champignons filamenteux et les levures. Parmi les manifestations cliniques, les signes et symptômes apparaissent généralement 1 à 3 jours après la blessure, caractérisés par des infiltrats blanc grisâtre, de texture rugueuse, aux bords irréguliers et plumeux. Elle peut s'étendre au stroma, aux infiltrats satellites, parfois à l'hypopyon, aux sécrétions

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purulentes, à l'inflammation de la chambre antérieure et aux micro-abcès. Le seul antifongique à usage oculaire est la natamycine. Cependant, en Amérique centrale, ce médicament, efficace à 90 % contre les ulcères fongiques, manque. Grâce aux dons de médecins nord-américains, ce médicament était disponible, ce qui a rendu cette recherche possible.

Mots-clés: Oeil; Dououreux; Champignons filamenteux; Natamycine; Légume; Traumatisme; Chambre antérieure; Cécité; Inflammation; Signes et symptômes.

RESUMO

As úlceras da córnea fúngicas têm uma maior prevalência em pessoas que trabalham no campo e afetam indivíduos em idade produtiva, o que gera um grande impacto econômico nos países de terceiro mundo. Por isso, é de suma importância um diagnóstico e tratamento adequados e rápidos, para promover a prevenção contra a cegueira causada por doenças infecciosas. Para que ocorra o desenvolvimento de uma úlcera da córnea fúngica, deve existir uma abrasão da barreira ocular normal. Qualquer tipo de fungo pode causar uma infecção no olho, os mais comuns são os fungos filamentosos e as leveduras. Entre as manifestações clínicas, costumam aparecer sinais e sintomas de 1 a 3 dias após a lesão, caracterizados por infiltrações brancas acinzentadas, com uma textura rugosa, bordas irregulares e penugentas; pode se estender até o estroma, infiltrações satélites, por vezes hipópio, secreção purulenta, inflamação da câmara anterior e microabscessos. O único antifúngico de uso ocular é a Natamicina, no entanto, na América Central, há uma carência desse medicamento, que representa 90% de eficácia para úlceras fúngicas. Graças a doações de médicos norte-americanos, foi possível contar com este medicamento, o que possibilitou esta pesquisa.

Palavras-chave: Olho; Úlcera; Fungos Filamentosos; Natamicina; Vegetal; Trauma; Câmara Anterior; Cegueira; Inflamação; Sinais e Sintomas.

IMAGE EXHIBITION

Below are slit lamp (LH) images of a male patient, 40 years old, with a history of a foreign plant body, who reports that he feels something entering his eye while working on a coffee farm. After this, he went to the local pharmacy and self-medicated with chloramphenicol + dexamethasone, which he used for three days, and upon noticing that there was no clinical improvement, he went to an ophthalmological consultation on 02/15/24.

On physical examination, he had visual acuity (VA) of 20/400 in both eyes, which did not improve with correction. When examined with the LH, there were no pathologies in the anterior segment (SA) of the right eye (OD); the left eye (OS, from Latin: Oculus Sinister) presented a 4x3mm temporal inferior corneal ulcer, superficial, with feathery edges, no satellite lesions, moderate to severe ciliary injection, no presence of hypopyon and Fluorescein staining of the infiltrate occurred— intraocular pressure of 12mmHg and 15mmHg respectively. With the Van Herick technique, open angles are observed. Fundoscopy of both eyes with retina applied, defined disc, excavation at 0.3mm, RE macula

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with choroidal rupture due to a history of blunt trauma ten years ago, and LE macula with good foveal brightness.

Due to the findings and characteristics of the lesion, a fungal corneal ulcer (FCU) is diagnosed in OS. Treatment starts with Natamycin every 6 hours, 0.4% sodium hyaluronate every 2 hours, Vitamin C 1 gram every 24 hours, Atropine every 12 hours, and debridement every 48 hours.

Debido a los hallazgos y características de la lesión, se diagnostica una úlcera corneal fúngica (UCF) en OS. Se inicia tratamiento con Natamicina cada 6 horas, Hialuronato de sodio al 0.4% cada 2 horas, Vitamina C 1 gramo cada 24 horas, Atropina cada 12 horas y debridamiento cada 48 horas.

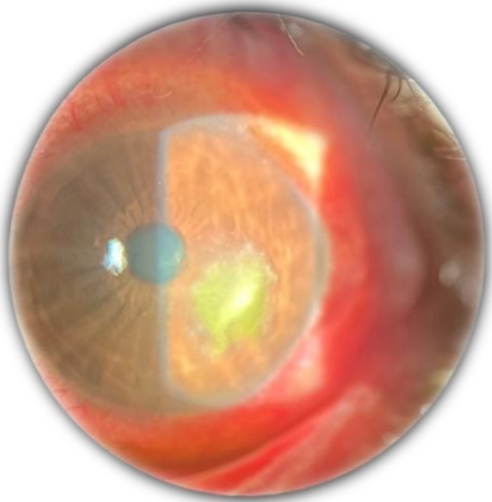


Figure 1. 4x3mm UCF

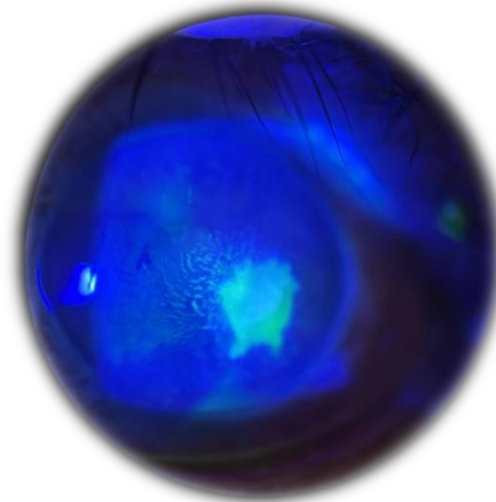


Figure 2. CFU with fluorescein staining and cobalt blue light

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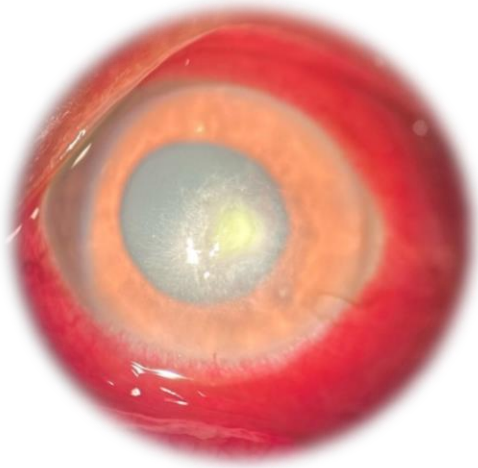


Figure 3. Ulcer at three weeks
2x2mm treatment

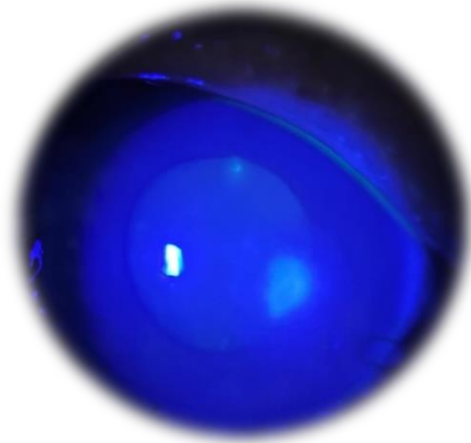


Figure 4. Ulcer at 3 weeks of treatment with
fluorescein staining and cobalt blue light

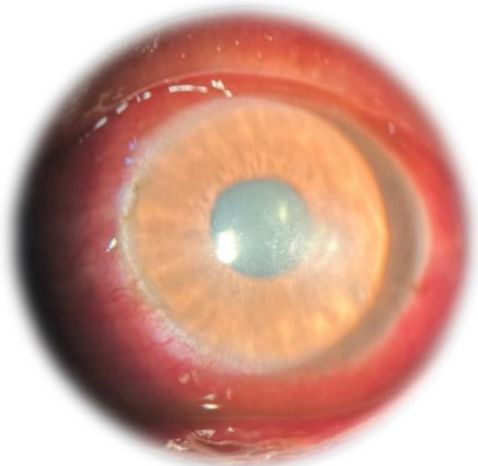


Figure 5. Ulcer at six weeks
treatment with corneal cloud

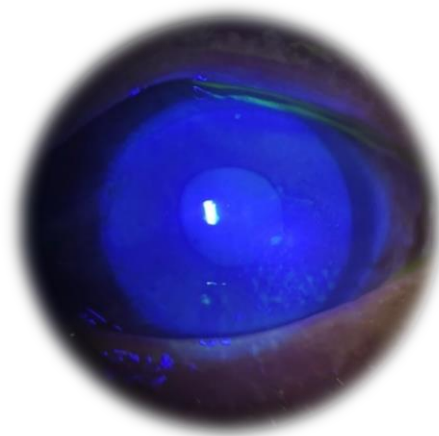


Figure 6. Ulcer at 6 weeks of treatment with
fluorescein staining and cobalt blue light

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Figures 1 and 2 show images of the patient's first consultation: an eye with a significant ciliary injection and a 4x3mm infiltrate at the corneal level, which, when stained with Fluorescein, makes the feathery edges of the ulcer evident.

Figures 3 and 4 show a clinical improvement after three weeks of treatment, with a VA of 20/150, a frank decrease in size, and, when stained with Fluorescein, a regression of the feathery edges indicative of the infection's limitation.

Figures 5 and 6 show the clinical presentation at the sixth week of treatment, when the infiltrate has wholly resolved, leaving only a cloud that did not alter the patient's visual health without corneal staining. Patient VA at last appointment 20/50.

FINANCING

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CONFLICTS OF INTEREST

No conflicts of interest are declared.

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To the editorial committee of the Medical and Life Sciences Journal

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Name of author(s):

Maria Alejandra López Alfaro

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Contribution of the authors

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