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Dry Eye Syndrome, Corneal Perforation and Rheumatoid Arthritis: About a Case*

Síndrome de ojo seco, perforación corneal y artritis reumatoidea: a propósito de un caso

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ABSTRACT

The subject is a male patient with a history of rheumatoid arthritis, dry eye syndrome and corneal transplant 3 years ago. Patient reports decreased visual acuity in his right eye. On physical examination, a rejection line is detected in meridian 6 of the cornea and temporal conjunctival hyperemia. A month later, he reports increased pain, conjunctival hyperemia, excessive secretion and visual acuity decreased to finger count at 3 meters in his right eye. The examination reveals a 360° corneal vascularization and aseptic perforation of the central cornea. The first therapeutic measure was cyanoacrylate and soft contact lenses, moxifloxacin 0.5% eye drops every 4 hours and sodium hyaluronate 0.1% eye drops. Fifteen days later, he did not report improvement and his visual acuity was reduced to finger count at 2 meters. On examination, neovascularization in four quadrant and seidel test was positive. The next day a conjunctival graft was performed improving the clinical condition; finally, a second tectonic corneal transplant was executed. The therapeutic and surgical approach to a corneal perforation depends on the size, shape, location and cause of the lesion, with cyanoacrylate tissue adhesives being useful in small lesions.

Keywords: Dry eye syndrome, corneal perforation, arthritis, rheumatoid, transplant.

* Artículo de investigación.

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Palabras clave: Síndrome de ojo seco, perforación corneal, artritis reumatoidea, trasplante.

RESUMEN

Se trata de un paciente masculino con antecedente de artritis reumatoidea, síndrome de ojo seco y trasplante de córnea, hace 3 años. El paciente informa disminución de la agudeza visual en el ojo derecho. En el examen físico, se detecta una línea de rechazo en el meridiano a las 6 en la córnea e hiperemia conjuntival temporal. Un mes después refiere secreción excesiva y disminución de la agudeza visual (cuenta dedos a 3 metros). El examen reveló vascularización corneal de 360° y una perforación aséptica de la córnea central. La primera medida terapéutica fue cianoacrilato y lentes de contacto blandos, colirio de moxifloxacino al 0,5 % cada 4 horas, y colirio de hialuronato de sodio al 0,1 %. Quince días después no refirió mejoría, y su agudeza visual se redujo a cuenta dedos a 2 metros. Al examen, la neovascularización en cuatro cuadrantes y la prueba Seidel fueron positivas. Al día siguiente, se realizó un injerto conjuntival que mejoró el cuadro clínico; finalmente, se realizó un segundo trasplante tectónico de córnea. El abordaje terapéutico y quirúrgico de una perforación corneal depende del tamaño, forma, ubicación y causa de la lesión, siendo útiles los adhesivos tisulares de cianoacrilato en lesiones pequeñas.

INTRODUCTION

Eye involvement represents a common finding in patients with systemic autoimmune diseases. Rheumatoid arthritis and their treatment often affect the ocular surface and lead to reduced vision (1). Corneal condition that is derived may be inflammatory, vascular or infectious, as well as iatrogenic, in the case of corticosteroids, causes that can lead to irreversible corneal (2). Corneal transplant rejection has been reported from 2% to 50%, depending on the degree of vascularization (2). The presence of dry eye syndrome has been shown to increase the risk of corneal transplant rejection. However, at least 30% of corneal transplant involvement shows episodes of immune reaction and one third leads to graft failure (3).

The purpose of this study is to identify the interdisciplinary management, follow-up of rheumatoid arthritis and the surgical approach after a corneal complication, secondary to dry eye based on a case report.

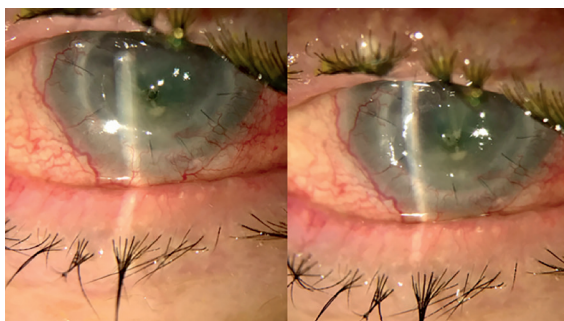
PRESENTATION OF THE CLINICAL CASE

We describe herein the clinical course of a 69-year-old Colombian male doctor since the initial visit to our institution. He presented foreign body

sensation, tearing, burning and visual acuity decrease in his right eye several weeks ago. No symptoms were reported in the left eye. He had a medical history of corneal transplant three years ago for corneal opacity and dry eye syndrome. In addition, the patient had diabetes mellitus, rheumatoid arthritis and hypothyroidism. The initial best corrected visual acuity was 20/400 on the right eye and 20/40 on the left eye. Additionally, he presented a slight bilateral dysfunction of the Meibomian gland. Line of rejection was observed in meridian 6 in cornea, and temporal conjunctival hyperemia. The first diagnosis was corneal transplant rejection and, consequently, prednisolone acetate 1% eye drops were prescribed. In addition, rheumatology assessment was performed, and rheumatoid factor, Anti-Sm, Anti-SS-A(Ro) were analyzed, including a salivary gland biopsy where the presence of amyloid in the labial salivary glands was reported. All tests were positive and all doses were adjusted. A week later, the patient referred decreased of foreign body sensation, tearing and burning, and improvement in visual acuity. One month after the initial presentation, the patient reported an increased pain, conjunctival hyperemia, excessive secretion and visual acuity reduce to finger count at 3 meters on his right eye. The left eye showed no discomfort. Slit Lamp examination revealed 360° corneal vascularization and aseptic central corneal perforation.

The initial therapeutic management was prescribed including cyanoacrylate and soft contact lens, moxifloxacin 0.5% eye drops every 4 hours. The dose of antibiotic was adjusted to the particular case, taking into account the possible toxicity on the epithelium; it was adjusted in the periodic controls, sodium hyaluronate 0.1% eye drops preservative free every hour. Fifteen days later, the patient reported signs of exacerbated pain in his right eye, tearing, burning, abundant secretion, and visual acuity decreased to finger count at 2 meters. He states using medication without any improvement. The ophthalmological examination in the slit lamp revealed vascularization in 4 quadrants, conjunctival hyperemia (figure 1), a central opacity with cyanoacrylate and centered soft contact lens. Seidel test was positive. On the next day, the patient was taken to be performed a conjunctival graft in the right eye. At postoperative care, it was found a conjunctival coating with suture in good condition (figure 2). Seidel test was negative and declined symptoms in the right eye, and the patient kept going with moxifloxacin 0.5% eye drops and sodium hyaluronate 0.1% eye drops preservative free.

FIGURE 1. Vascularization in all quadrants and conjunctival hyperemia

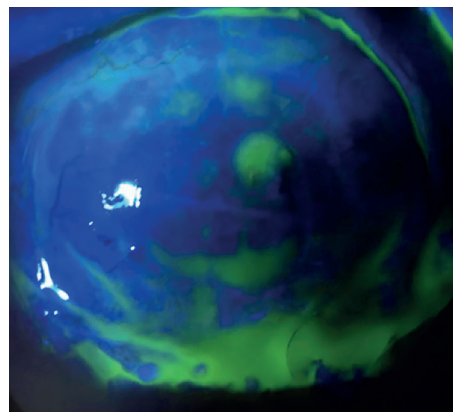


Source: own work

The poor response in his right eye suggested a second surgery, such as a tectonic corneal transplant, since, as a result of his dry eye syndrome and the immunologic response of rheumatoid arthritis, he could undergo the conjunctival graft failure at any time, and the threat could make a new corneal perforation. The patient continued his

treatment with preservative free artificial tears, carbomer eye gel, cyclosporine 0.1% eye drops and interdisciplinary management with rheumatology and internal medicine. The corneal integrity is stable, there is no new corneal perforations at this moment, but its visual acuity unfortunately decreased to light perception.

FIGURE 2. Negative Seidel Test



Absence of communication between the anterior chamber of the eye and the external surface

Source: own work

DISCUSSION

This case represents an interdisciplinary challenge for managing combined pathologies such as dry eye syndrome and rheumatoid arthritis, and, as a consequence, for the decision on the best possible treatment and continued care for the well-being of the patient. As previously mentioned, the patient reported symptomatology in the transplanted eye from several weeks ago, involving corneal transplant rejection, but those symptoms could begin months earlier, being able to prevent the worsening of the case. Rheumatoid arthritis is a chronic autoimmune disease that affects many organs, and has a prevalence of 0.8 to 1% of the population (4). Ocular manifestations exist in 25% of patients with rheumatoid arthritis; in order of descending frequency, include keratoconjunctivitis sicca, corneal infection, episcleritis, scleritis, anterior uveitis, or dissimilar variety of corneal inflammation such as stromal keratitis, peripheral ulcerative keratitis and sterile corneal

ulceration (5). Villani et al. investigated corneal commitment in rheumatoid arthritis with in vivo confocal microscopy and found elevated quantity of hyper reflective activated keratocytes, and then suggested an inflammatory process in this autoimmune disease. Sterile corneal ulceration can occur in either the central or peripheral cornea with a deficiency of ocular symptoms, and may lead to corneal perforation (6). Successful use of tissue adhesive was reported in 6 of the 12 patients with imminent or actual corneal perforation associated with rheumatoid arthritis, although the use of tissue adhesive, is restricted to small perforation. The prognosis for graft survival in those patients was poor as compared to the 95% survival of grafts for the more common conditions, such as Fuchs' dystrophy, bullous keratopathy, and keratoconus (6).

The most common cause of early failure of penetrating grafts was recurrent melt, which usually involved the graft-host junction. This suggests that aggressive management of this destructive process in the perioperative period is essential. Currently, systemic immunosuppression seems to be the best way to achieve it. Ocular surface infection was identified as the most important factor to influence long-term graft survival after 6 months. Patients with deficient corneal environment are known to be at risk for microbial infections. Clear guidelines in the management of corneal perforation in rheumatoid arthritis patients have not yet been established. Data on the surgical management of corneal perforations associated with rheumatoid arthritis are scarce and mainly involve isolated case reports or small series (6).

In general, there are various surgical and non-surgical treatments, ranging from bandages with contact lenses and tissue glue in case of small localized and paracentral perforations, useful for small perforations, to reform the collapsed anterior chamber and restore visual function (7). Surgical techniques include simple cornea suture, conjunctival flaps, multilayer amniotic membrane transplantation and tectonic corneal grafts (8). However, although

keratoplasty is valuable for maintaining ocular integrity, a transparency rate of only 67% has been reported in cases with severe preoperative inflammation of the anterior segment (9).

The use of cyanoacrylate is used in perforations measuring less than 3 mm in diameter, with a concave profile and isolated from the limbus. In some cases, its use can induce stromal, endothelial and lenticular toxicity when it comes into contact with the cornea or crystalline. Other complications include increased intraocular pressure due to inflammation of the trabecular meshwork, microbial keratitis, which is why third-generation antibiotics are used in treatment as prophylactic agents (10).

The time going from the first cornea transplant, the appearance of signs and the management of complications impacts on the visual prognosis. Ocular signs could be a sensitive marker for identifying the immune reactivation of rheumatic disease.

CONCLUSIONS

The therapeutic and surgical approach to a corneal perforation depends on the size, shape, location and cause of the lesion, with cyanoacrylate tissue adhesives being useful in small lesions. The timely diagnosis of eye diseases associated with chronic pathologies such as rheumatoid arthritis, can reduce complications and sequelae at the ocular level.

CONFLICT OF INTEREST

The article has no conflict of interest.

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