TREATMENT OF THE BACTERIAL CORNEAL ULCER

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ABSTRACT

We present to you the case of a 15-year-old patient, of Iași County, with a history of Intraselary Bilateral Polylobed Giant Craniopharyngioma, Operated Iteratively (2011-2012) and at the left eye. Bacterial Corneal Ulcer, Post-trichiasis, therapeutically neglected. The biomicroscopic examination highlighted the fact that the corneal ulceration of the left eye had affected the central and inferior part of the cornea, presenting a descemetocele, so a surgery was performed and the loss of substance at cornea level was covered by a fragment of amniotic membrane.

Key words: corneal ulcer, trichiasis, amniotic membrane

INTRODUCTION

The corneal ulceration and the corneal scar which remains after the healing are blindness causes in the emergent countries. The corneal ulcers are divided into 2 categories: infectious (caused by bacteria, fungi, viruses and parasites), non-infectious (autoimmune, neurotrophic, toxic) and secondary to the entropion, blepharitis, neglected corneal traumatisms. The treatment must be set up, after the realization of a culture on different culture media, in order to highlight the pathological aspect. The infectious corneal ulcer shall be treated with topic and systemic antibiotics, most frequently, anti-inflammatory, corneal cicatrizant drugs, and vitamin C for stimulating the local immunity. If the ulcer does not heal and the evolution is adverse to desmecetocele, one can choose the therapeutic contact lens, coverage with amniotic membrane, conjunctive coverage, tarsoraphy or keratoplasty.

CLINICAL CASE

The patient H. A., 15 years old, Iași County, was admitted in the Clinic no. II of Ophthalmology, by transfer from the Clinic no. III of Neurosurgery of the “Prof. Dr. Nicolae Oblu” Emergency Clinical Hospital of Iași, being admitted on October 18, 2012 with the symptoms: profound ocular congestion, mucopurulent secretions, epiphora, diffuse ocular pain, foreign body sensation, progressive decrease of the left eye visual acuity (left eye visual acuity=2/50). The patient was diagnosed after an inter-clinical examination with bacterial corneal ulcer of the left eye, on September 3, 2012; the examination of the lesion scraping on different culture media highlighted the presence of Escherichia Coli bacterium, sensitive to ofloxacin. The patient neglects
the therapeutic indications, being admitted in the Clinic of Ophthalmology, with the exacerbation of the anterior pole symptoms, the ulceration evolving towards descemetocele. The patient presents the following general pathologic antecedents: Operated Craniopharyngioma (2010); Operated Intrasellary Bilateral Polyalbed Giant Craniopharyngioma (2011, 2012); Hypophysis Nanism (2012); Right Eye – Post-operatory Total Palpebral Ptosis (2012); Right Eye – Severe Amblyopia with Temporal Hemianopsia; Right Eye – Partial Atrophy of The Optic Nerve; Left Eye Bacterial Corneal Ulcer (2011). Living conditions are precarious. The results of the general objective clinical examination show other pathological modifications: nanism, hepatosplenomegaly. Pupillary reflexes – photomotor: right eye – fixed mydriasis, left eye - present. Chromatic sense: right eye – does not register, left eye - present. The examination of the ocular annexes: edema and diffuse congestion at the level of the upper eyelid, left eye – palpebral cilia implanted viciously at the ciliary margin of the inferior eyelid (trichiasis), right eye – complete palpebral ptosis (post-operatory) (Fig.1). Ocular motility: left eye – normal in all the vision directions, right eye exodeviation. The biomicroscopic examination of the right eye highlights: anterior pole, with normal aspect, except the fixed mydriasis. Left eye – intense perikeratic congestion, central ulceration and in the inferior 1/3 of the cornea, close to the sclerocorneal limb (fixes the fluorescein), which invades the stroma up to the Descemet membrane (descemetocele), with mucopurulent deposit, margins of the infiltrated ulceration, perilesional corneal edema, small anterior chamber; normally located crystalline with diffuse opacities (Fig. 2).

Figure 1. Right eye - palpebral ptosis

The ophthalmologic examination highlights: visual acuity of the right eye = zero; visual acuity of the left eye = 2/50, with the reduction of the inferior visual field, because of the corneal opacities. Light perception and projection, right eye - absent, left eye - present. The ophthalmoscopic examination highlights at the right eye: total atrophy of the optic nerve; left eye: cannot be examined because of the corneal opacities. The data from the anamnesis, the general objective clinical and overall ophthalmologic examination directs towards the probability diagnostic: Left Eye - Bacterial Corneal Ulcer, Descemetocele, Left Eye - Trichiasis, Right Eye – Post-operatory Total Palpebral Ptosis, Right Eye – Total Atrophy of the Optic Nerve. The determination of the positive diagnostic and the realization of the actual biological configuration of the patient require the following target complementary explorations: hemoleucogram; abdominal
echography: it highlights the hepatosplenomegaly and the vesicular lithiasis. The pediatric examination establishes the diagnostics: Toxic Hepatocitolisis Syndrome, Familial Hypercholesterolemia, Vesicular Lithiasis. We recommend the admission in the Pediatric Clinic of the “Sf. Maria” Hospital of Iași, after the treatment of the acute ocular symptoms. Based on the data from the anamnesis, from the general objective and ocular examination and on the complementary explorations, the following positive diagnostic was identified: Left Eye – Bacterial Corneal Ulcer, Descemetocele, Left Eye - Trichiasis, Right Eye – Post-operative Total Palpebral Ptosis, Right Eye – Total Atrophy of the Optic Nerve, Iterative Operated Intrasellary Bilateral Polylobed Giant Craniopharyngiom (2011, 2012), Hypophysys Nanism, Toxic Hepatocitolisis Syndrome, Familial Hypercholesterolemia, Vesicular Lithiasis. Clinical symptoms at the left eye: diffuse pain, intense congestion, epiphora, mucopurulent secretions, foreign body sensation, progressive decrease of the left eye visual acuity, associated to the biomicroscopic aspect of the anterior pole of the left eye, which highlights the central and inferior corneal ulceration, with infiltrated margins and mucopurulent deposit, with descemetocele, with the loss of the anterior chamber.

Differential diagnostic
The differential diagnostic of the bacterial corneal ulcer was performed with: fungal corneal ulcer, dendritic ulcer, Acanthamoeba keratitis, neurotrophic ulcer, Mooren ulcer, keratitis produced by the Varicelo-Zosterian virus, allergic keratoconjunctivitis, resistant bacterial ulcer (with Methicillin-resistant Staphylococcus Aureus).

Treatment
During the hospitalization, he received topic treatment with non-steroidal anti-inflammatory drugs (Indomethacin 1 drop x 5/day topic, Diclofenac 100 mg/day), antibiotics (Ofloxacin 1 drop every 30 min; Ceftriaxone 1 g every 12 hours i.v.), corneal cicatrizant drugs, Tropicamid 1% (1 drop x 3/day), ocular hypotension drugs (Dorzolomid and Timolol 1 drop x 2/day), Vitamin C 1g/day, Euthyrox 62.5 μg/day, Prednisone 5 mg/day, Carbamazepine 200 mg/day, Omeprazole 20 mg/day. The absence of the anterior chamber, vision reduction from 2/50 to 1/500 and the presence of the corneal descemetocele imposed the emergency surgical intervention, under the general anestesia of the patient: we covered the corneal ulceration with a fragment of amniotic membrane and we performed the depilation of the palpebral cilia of the left eye (October 16, 2012). The evolution was favorable: in the first day after the surgery, the bio microscopic examination shows conjunctive congestion at the left eye, the amniotic membrane fragment was correctly located on the cornea surface; adherent to its surface, the anterior chamber was present. The patient is discharged 10 days after the surgery, following a treatment with topic antibiotics, non-steroidal anti-inflammatory drugs, corneal cicatrizant drugs; 4 weeks after the intervention, the biomicroscopic examination shows: left eye diffuse conjunctive congestion, resorption of the amniotic membrane fragment, present central corneal ulceration, but with small dimensions, peripheral vascularization of the cornea. On November 20, 2012 the patient is admitted again and he is subject to a double coverage with an amniotic membrane fragment of the remaining corneal ulceration, under general anestesia at the left eye (November 23, 2012). After the surgery (November 29, 2012), the patient follows a topic treatment
with antibiotics (ofloxacin 1 drop x 5/day), anti-inflammatory, corneal cicatrizant, ocular hypotension drugs. The evolution a month after the surgery: at the left eye, the amniotic membrane fragments at cornea level was resorpted, the corneal ulceration was reepithelialised, the margins of the old ulceration were transparentized, almost 2-3 mm, from the sclerocorneal limb. The patient must maintain the topical treatment with non-steroidal anti-inflammatory drugs (Indomethacin 1 drop x 3/day) and corneal cicatrizant drugs (1 drop x 5/day); 3 months following the surgical intervention, the patient presented the following visual acuity suitable for reading and walking: visual acuity of the left eye = 4/50 (Fig. 3).

Figure 3. Left eye – reepithelialized corneal ulceration

Prognostic

In the clinical case presented above, the evolution was favorable; the ulceration regressed, being replaced by a dense fibrous tissue. However, the prognostic of this case remains reserved, because the vision of the right eye is zero and of 4/50 at the left eye after the healing of the ulceration, being indicated the keratoplasty, in a next stage, after the stabilization of the corneal scar.

Distinctiveness of the case

This case is distinct because the trichiasis was subsequently the cause of corneal erosion, infected with the Escherichia Coli bacteria, causing a corneal ulceration, therapeutically neglected by patient’s non-compliance; subsequently, it worsened, evolving towards descemetocle and the loss of the anterior chamber. The surgical treatment aimed at reconditioning the corneal plan with the amniotic membrane fragments, which has a double role – reconditioning the corneal continuity and stimulating the corneal reepithelialization, by the contribution of the stem cells.

DISCUSSIONS

In the clinical case presented above, after the diagnostic was certain, besides the topic intensive drug treatment we also performed the surgical treatment, the coverage of the corneal ulceration with amniotic membrane fragments, which had a maximum efficiency. The amniotic membrane fragments, which applic at ulceration level have the role of: regenerating the corneal stroma, facilitating the migration of the corneal epithelial cells, reducing the corneal pannus, regulating the inflammatory process, diminishing the fibrosis process, preventing the epithelial cells apoptosis and it has anti-microbial properties.

According to the specialty literature, the treatment set up must have in view the removal of the mechanical causes which provoke the corneal ulcer (ablation of the conjunctive calculi, entropion, trichiasis, lagophthalmia), treatment of the infections (dacyrocystitis, conjunctivitis) and of the post-traumatic erosions. The treatment aims at fighting against the infection, by destructing or neutralizing the pathogen agent. One shall recommend an immediate and dynamic treatment with broad-spectrum antibiotics, which shall be subsequently amended according to the results provided by the antibiogram. In the bacterial ulcers, the antibiotics are administrated both locally (instillations, sub conjunctive injections) and
generally. Antibiotics therapy failure in the bacterial ulcers requires a non-specific local treatment, in order to destroy the pathogen agent and stop the progression of the infiltration of the ulcer’s margins (curettage, iodized alcohol). In certain ulcers located in the marginal area, a conjunctive coverage is needed. In order to favor ulcer cicatrization, the poor condition of the organism shall be combated and general tonics and vitamins shall be administered. In the trailing ulcers, one shall perform coverage with an amniotic membrane fragment or keratoplasty.

CONCLUSIONS

The drug and surgical treatment performed in this clinical case determined the improvement of the useful visual acuity from 1/500 to 4/50. In the therapeutic approach of this disease it is essential to suppress any mechanical cause, which determines, maintains or aggravates the ulcer (in our case: trichiasis), but also patient’s compliance to the topic treatment.

REFERENCES