COMPARISON BETWEEN FOUR DIFFERENT TREATMENT REGIMENS AFTER CORNEAL CROSS LINKING FOR THE MANAGEMENT OF KERATOCONUS

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INTRODUCTION

Keratoconus (KC) is one of the most prevalent corneal ectatic disorders characterized by progressive, non-inflammatory changes in stromal collagen structure and usually results in protrusion and alteration of the central and paracentral cornea.

Treatment of early keratoconus involves prescribing spectacles, rigid gas permeable contact lenses. In a small but significant proportion of patients, disease progression may require eventual corneal transplantation. Several new therapeutic options have emerged, including refractive, optical, and lamellar surgery, which slow the progression of the disease and/or delay more intensive treatment. Corneal collagen crosslinking (CXL) with ultraviolet A (UV-A) light and riboflavin (vitamin B2) is a relatively new treatment that reportedly slows the advancement of the disease in its early stages.

The focus of postoperative management after corneal crosslinking is to restore a healthy ocular surface as quickly as possible. There are three main aspects to post-crosslinking patient management: 1) hastening reepithelialization, 2) preventing infection, and 3) reducing pain.

AIM OF THE WORK

The aim of this study was to compare between four different treatment regimens after corneal cross linking for the management of keratoconus in terms of epithelial healing, pain and corneal haze.

PATIENTS AND METHODS

This is a randomized prospective interventional study. Simple table randomization was used. The study was done on 60 eyes with keratoconus that underwent corneal collagen cross linking with the following criteria:

- Keratoconus of stages 1-3 according to Amsler-Krumeich classification.
- Thinnest corneal thickness (TCT) more than 450 um with epithelium.
- Patients who did not wear contact lenses for one month prior to the initial evaluation and treatment.

Preoperative and postoperative data were collected. Patients were contacted as an attempt to complete any missing follow-up data, full examination of operated eyes, visual acuity assessment, corneal topography, specular microscopy and anterior segment OCT were done for respondent cases. Patients were divided into four groups according to the postoperative therapeutic intervention as shown in Table 1. Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp). Significance of the obtained results was judged at the 5% level.

Table 1: Distribution of the studied cases according to therapeutic intervention

Patient Groups	Therapeutic Intervention
First group (Group I)	Preservative free steroids five times a day with gradual tapering over 5 weeks
Second group (Group II)	Non-steroidal anti-inflammatory eye-drops three times a day for five weeks
Third group (Group III)	Preservative free steroids with gradual tapering over 5 weeks with Vit. C tablets till complete epithelial healing
Fourth group (Group IV)	Non-steroidal anti-inflammatory eye-drops three times a day for five weeks with Vit. C tablets till complete epithelial healing

RESULTS

Table 2: Distribution of the studied cases according to the clinical presentation (*n*=57)

Clinical Presenting Symptoms	No.	%
1. Blurring of vision	51	89.5
1. Frequent change of eye glasses	56	98.2
1. Itching	41	71.9
1. Burning sensation	38	66.7

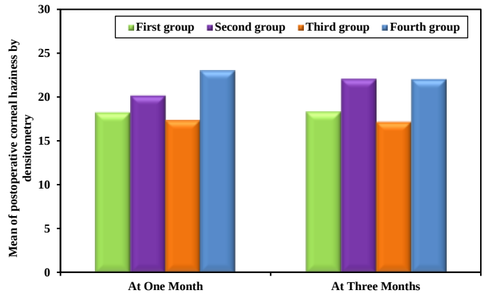

Figure 1: Distribution of the studied cases according to postoperative corneal haziness by densitometry.

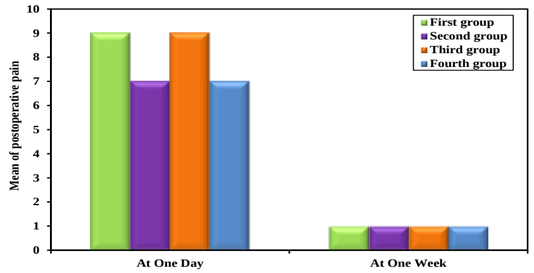

Figure 2: Distribution of the studied cases according to postoperative pain

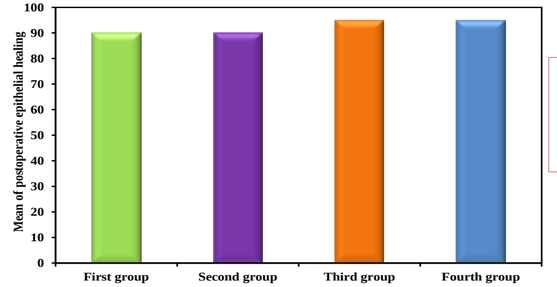

Figure 3: Distribution of the studied cases according to postoperative epithelial healing

CONCLUSION

- Corneal collagen cross-linking (CXL) with riboflavin is an accepted universal standard of care for keratoconus patients with progressive disease.
- There is significant postoperative pain after corneal collagen cross linking that show no significant difference between the 4 therapeutic regimens.
- Oral Vit. C might be considered in the standard of care after CXL.
- Steroids play an important role in preventing and decreasing the development of corneal haze after cross linking.
- The limitations of this study where follow-up period was 3 months only. Some disadvantages of densitometry measurement with Scheimpflug camera must also be mentioned. That is, total densitometry only was measured Also, smoking status was not documented which is correlated with worse wound healing.

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