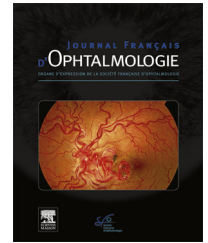


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ORIGINAL ARTICLE

Influence on intraocular pressure of anti-inflammatory treatments after selective laser trabeculoplasty[☆]



Impact du traitement anti-inflammatoire post-trabéculoplastie au laser sélectif sur la tension intraoculaire

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Summary

Introduction. — Selective laser trabeculoplasty (SLT) is an effective and safe procedure to lower intraocular pressure (IOP) in the management of open-angle glaucoma. The post-laser inflammatory reaction could be positively implicated in SLT efficacy and the relevance of postoperative use of topical anti-inflammatory remains controversial. The goal of this study is to determine the effect of various anti-inflammatory treatments on intraocular pressure and on side effects following SLT.

Material and methods. — A prospective, randomized, double-blind study with a control group was conducted. Ninety-six eyes of 67 patients with primary open-angle glaucoma who underwent SLT were enrolled in this study between March 2009 and March 2012. Eyes recruited in the study were randomized to receive either prednisolone acetate 1%, diclofenac 0.1% or a placebo. The 3 treatments were administered 4 times a day for 5 days following SLT. The intraocular pressures were measured at regular intervals during the 6-months follow-up period. Side effects were also evaluated with a questionnaire as well as with the ocular exam.

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MOTS CLÉS

Anti-inflammatoire ;
 Anti-inflammatoire
 non stéroïdien ;
 Glaucome à angle
 ouvert ;
 Pression
 intraoculaire ;
 Stéroïde ;
 Trabéculoplastie

Results. – The analysis of the relative IOP decrease over the 6-months period revealed a significant difference between the time points of follow-up ($P < 0.0001$), but no group effect ($P = 0.2980$). No significant difference regarding anterior chamber inflammation and discomfort was observed between the 3 groups.

Conclusion. – There was no difference in intraocular pressure reduction, intraocular inflammation or ocular discomfort post-SLT when comparing the 3 treatment modalities.

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Résumé

Introduction. – La trabéculoplastie au laser sélectif (TLS) est une procédure efficace et sécuritaire pour diminuer la tension intraoculaire (TIO) dans le traitement du glaucome à angle ouvert. La réaction inflammatoire post-TLS pourrait être positivement impliquée dans son efficacité et la pertinence d'utiliser des anti-inflammatoires demeure controversée. Le but de cette étude est de déterminer l'effet de différents traitements anti-inflammatoires sur la TIO et les effets secondaires post-TLS.

Matériel et méthodes. – Cette étude prospective, randomisée, à double insu avec un groupe témoin, inclut 96 yeux de 67 patients atteints de glaucome primaire à angle ouvert et ayant subi une TLS, recrutés entre mars 2009 et mars 2012. Ils ont été randomisés pour recevoir soit de l'acétate de prednisolone 1%, du diclofénac 0,1% ou un placebo, à raison de 4 fois par jour pendant 5 jours post-TLS. La TIO était mesurée à intervalle régulier durant la période de suivi de 6 mois. Les effets secondaires ont été évalués par un questionnaire et l'examen oculaire.

Résultats. – L'analyse de la diminution relative de TIO sur une période de 6 mois démontre une différence statistiquement significative entre les temps de suivi ($p < 0,0001$), mais aucun effet de groupe ($p = 0,2980$). Aucune différence statistiquement significative au niveau de l'inflammation intraoculaire et de la douleur n'a été observée entre les 3 groupes.

Conclusion. – Il n'y a pas de différence statistiquement significative au niveau de la réduction de TIO, de l'inflammation intraoculaire ou de la douleur après la TLS en comparant les 3 modalités de traitement.

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Introduction

Laser trabeculoplasty is recognized as an effective and safe procedure in the management of open-angle glaucoma. The first description of argon laser trabeculoplasty (ALT) was made by Wise and Witter in 1979 [1] and its efficiency has been well established by the Glaucoma Laser Trial [2]. In 1995, Latina and Park introduced a Nd:YAG laser targeting specifically pigmented trabecular cells [3], leading to selective laser trabeculoplasty (SLT), which was then shown effective in vivo [4]. Many trials demonstrated SLT to be as effective as ALT in lowering intraocular pressure (IOP) [5–8]. Since SLT does not cause coagulative damage and preserves the trabecular meshwork architecture, it has the theoretical advantage over ALT of being potentially repeatable [9], making it a laser of choice for treatment of glaucoma.

Scientific literature confirms SLT efficiency and a literature review by Stein and Challa clearly demonstrated an IOP reduction following SLT from 11 to 40% [10].

Many variables differ across studies assessing SLT efficacy. One of these variables pertains to the type of topical medication used after the trabeculoplasty to limit intraocular inflammation and patient discomfort. In fact, a

mild-to-moderate anterior chamber reaction is seen in 83% of eyes receiving 180 degrees SLT, appearing early after treatment and resolving in a few days, according to a study using prednisolone acetate 1% post-SLT [4]. According to this same study, a reported 15% of patients have temporary ocular discomfort following the procedure [4].

One of the proposed mechanisms of action of SLT relies on its inflammatory reaction. Alvarado et al. demonstrated that the release of interleukin-1 α , -1 β and -8, and tumor necrosis factor α by trabecular meshwork endothelial cells treated with SLT accounts for the increased permeability of Schlemm's canal endothelial cells [11]. Alvarado et al. also highlighted that the innate immune system has a role in the mechanism of action of SLT. Following SLT, increased monocytes recruitment in the trabecular meshwork could influence IOP-lowering. It is suggested that monocytes could release cytokines acting on transendothelial fluid flow while mononuclear phagocytes could also clear the trabecular meshwork of obstructing matter [12].

The post-laser inflammatory phase could then play an important role in attaining the maximal efficacy of SLT. This theory generates some controversy concerning the post-operative use of topical anti-inflammatory drops. As the

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