The intraocular - lowering effect of selective laser trabeculoplasty in the treatment of glaucomatocyclitic crisis

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Purpose: To evaluate the effect of selective laser trabeculoplasty in the treatment of patients with glaucomatocyclitic crisis. Methods: This was a retrospective case series study. 10 patients with uncontrolled intraocular pressure using maximally tolerated medical treatment were included in our study. 360° selective laser trabeculoplasty was performed during the intermission of glaucomatocyclitic crisis. Intraocular pressure reduction and best-corrected visual acuity were recorded during the recurrence of this disease. Adverse events were recorded after treatment. Results: The mean intraocular pressure (IOP) significantly decreased from 46.20 ± 7.16 to 14.50 ± 0.89 mmHg, with a statistically significant difference (p = 0.0001) after a mean recurrence time of 6 ± 13.35 months. The mean best corrected visual acuity (BCVA) significantly improved from 0.79 ± 0.08 to 0.98 ± 0.15, with significantly statistic difference (p = 0.03). No significant local or systemic adverse effects were observed after treatment. Conclusions: SLT was effective and safe in the management of glaucomatocyclitic crisis eyes. Journal of Nature and Science, 1(4):e75, 2015

Selective laser trabeculoplasty | intraocular pressure | glaucomatocyclitic crisis

Introduction
Glaucomatocyclitic crisis or Posner-Schlossman Syndrome (PSS) is a special type of anterior uveitis associated with glaucoma and characterized by recurrent attacks of elevated IOP along with mild anterior chamber inflammation with a few keratic precipitates[1, 2]. In the majority of cases, patients retain a normal visual field and optic disc. However, some studies reported that a recurrent PSS induced optic disc atrophy by a recurrently high IOP[3, 4]. Treatment of this syndrome is directed at controlling the inflammation and IOP. For some cases that do not control IOP with maximal medical therapy, filtering surgeries are required. Although several case series reported that trabeculectomy resulted in effective IOP reduction, the surgical success rates of filtering surgery were lower for uveitic glaucoma and another major problem was the formation of secondary cataract [5, 6].

In recent years, selective laser trabeculoplasty has been extensively used as a first-line therapy for primary open angle glaucoma (OAG) [7]. Previous studies indicated that SLT was an effective and safe procedure with low complication rates[8-10]. The aim of this study was to evaluate the safety and efficacy of 360° SLT treatment in Glaucomatocyclitic crisis patients.

Materials and methods
This study was conducted at department of ophthalmology, Renji Hospital, and approved by the Institutional Review Board of Renji Hospital. Medical Ethics Committee approval was also obtained. This was a retrospective case series study of ten consecutive patients with glaucomatocyclitic crisis recruited from July 2014 to January 2015. All patients were treated with SLT by the same clinician. The mean recurrence times were 6± 13.35 months. The diagnostic criteria for glaucomatocyclitic crisis were referred to as described previously[11]. Exclusion criteria: (1) inadequate visualization of angle structures; (2) previous intraocular surgery; (3) ocular disease that might affect clinical outcomes assessment; (4) pregnancy or planning to become pregnant; (5) non-glaucomatous optic neuropathy. Baseline data were obtained for each patient before the treatment, including BCVA, Goldmann applanation tonometry, anterior segment examination, gonioscopy, optic disc examination and Humphrey 30-2 automated perimetry.

SLT technique
All patients were treated using TobraDex eyedrops, four times daily (0.3% tobramycin + 0.1% dexamethasone, Alcon, Belgium) for more than 1 month before surgery to control anterior uveitis and antibiotic prophylaxis. The laser procedure was conducted by the same physician (Tan HB) with the Q-switched frequency doubled 532nm ND: YAG laser (Lumenis Selecta 700; Coherent Medical Group, Santa Clara, CA, USA). The 360° SLT treatment procedure was performed under the entire meshwork with approximately100 continuous but non-overlapping spots. The initial laser energy was set at 0.6 m J, but the energy was titrated up and down in 0.1 m J increments in order to achieve bubble formation during the treatment. Postoperatively, all patients were given pranoprofen eye drops 4 times per day for 7 days. If elevated IOP was over 25mmHg one hour after treatment, all topical hypotensive medications used was given one more .

Outcome parameters
The primary outcome of this study was IOP reduction in the recurrence of glaucomatocyclitic crisis. The secondary outcomes were BCVA and adverse effects. Slit-lamp biomicroscopy of the anterior segment, gonioscopy, and fundal examination (the cup-to-disc ratio and the presence of peripheral anterior synechiae) were recorded.

Statistical analysis
Date analysis was performed with SPSS 19.0 (SPSS Inc., Chicago, IL, USA). IOP and BCVA (logarithm of the minimal angle of resolution: logMAR) differences in the intermission and recurrence of glaucomatocyclitic crisis after SLT were determined by Student’s t tests. A P < 0.05 was considered to be statistically significant. The data were presented as mean, standard deviation (SD).

Results
A total of 10 eyes from 10 patients were included in the study. The mean age was 38.50±4.50 years (ranging, 23- 48years). The mean BCVA (logMAR) was 0.79±0.08. The mean baseline IOP was 46.20±7.16mmHg. Preoperative cup-to-disc ratio and visual field defects represented the characteristics of glaucomatous optic nerve change. Baseline characteristics of the patients were listed in Table 1.

Table 1. Baseline characteristics of the patients included in the study.

<table>
<thead>
<tr>
<th>Outcome parameter</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age(years)</td>
<td>38.50 ± 4.50</td>
</tr>
<tr>
<td>Mean recurrence time</td>
<td>6 ± 13.35</td>
</tr>
<tr>
<td>Mean baseline BCVA(logMAR)</td>
<td>0.79 ± 0.08</td>
</tr>
<tr>
<td>Mean baseline IOP(mmHg)</td>
<td>46.20 ± 7.16</td>
</tr>
<tr>
<td>Mean baseline HFA-MD(dB)</td>
<td>-12.93 ± 5.72</td>
</tr>
<tr>
<td>Mean baseline HFA-PS(D)</td>
<td>7.76 ± 2.40</td>
</tr>
<tr>
<td>Mean baseline VCDR(%)</td>
<td>0.53 ± 0.24</td>
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</tbody>
</table>

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Conflict of interest: No conflicts declared.
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Glaucomatocyclitic crisis is a common disease, commonly occurring in patients with 20 and 50 years of age [12]. The exact mechanism of the acute self-limited rise in IOP is still unknown.

**Discussion**

Glaucomatocyclitic crisis is a common disease, commonly occurring in patients with 20 and 50 years of age [12]. The exact mechanism of the acute self-limited rise in IOP is still unknown.

As shown in Table 2, the mean baseline IOP decreased from 46.20±7.16 to 14.50±0.89 mmHg with any anti-glaucoma medications, with a statistical difference (p = 0.0001) during the active uveitis after the recurrence. Visual acuity was improved except for one patient, and the mean BCVA (logMAR) was 0.98±0.15. A significant difference was observed in the mean BCVA (P = 0.003). Transient postlaser IOP spike of greater than 5 mmHg was found in 2 cases at one hour after laser therapy.

A minimal inflammatory reaction was observed in seven eyes and none of eyes had a persistent inflammatory reaction beyond one week. There were no significant systemic adverse effects and none of cases had a persistent inflammatory reaction beyond one week. None of cases had a persistent inflammatory reaction beyond one week.

### Table 2. Comparison of intraocular pressure and visual acuity before and after selective laser trabeculoplasty

<table>
<thead>
<tr>
<th>Index</th>
<th>intermission</th>
<th>recurrence</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean BCVA (logMAR±SD)</td>
<td>0.79±0.08</td>
<td>0.98±0.15</td>
<td>0.03</td>
</tr>
<tr>
<td>Mean IOP (mmHg±SD)</td>
<td>46.20±7.16</td>
<td>14.50±0.89</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

SD: standard deviation; BCVA: best corrected visual acuity; IOP: intraocular pressure.

Topical IOP-lowering and anti-inflammatory medications are needed to control IOP and inflammation. However, some patients have some characteristics such as glaucomatous optic nerve changes and visual field defects [1]. SLT is a relatively new treatment available to lower IOP in glaucoma, but reports about the treatment effect on PSS is very few. Our results demonstrated that SLT is effective and safety in the treatment of PSS patients.

Previous literatures reported that IOP-lowering efficacy by SLT varied differently, ranging from 12 to 47.1% from baseline for POAG [13,14]. Our results indicated that the reduction in IOP was 68.61% for PSS. In our study, the difference may be related to higher baseline IOP levels.

For adverse effects, 20% of all patients had an IOP spike of more than 5 mmHg one hour after SLT in our study. The rate of IOP spike was comparable with previous report of 27% on OAG [15]. Peripheral anterior synechiae was not found.

Our study was limited because of the small number of patients, lack of a comparison, and retrospective study design. Nevertheless, we believe that SLT is effective and safety in the management of patients with PPS. Further long-term randomized clinical trials with a larger sample size are needed to confirm our results.

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The authors alone are responsible for the content and writing of the paper.