Anterior Segment Effects of Laser Peripheral Iridoplasty in Acute & Non-Acute Primary Angle Closure Eyes

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Purpose
To determine if laser peripheral iridoplasty treatment of acute and non-acute primary angle closure eyes is associated with untoward effects on anterior segment structures such as the cornea, anterior chamber, peripheral angles and lens.

Study Design
Prospective, comparative case series

Study Population
Patients with acute and non-acute primary angle closure diagnosis.

Methods
Patients with primary angle closure (PAC) were grouped into three.

<table>
<thead>
<tr>
<th>Group</th>
<th>Total No. of Patients</th>
<th>Female:Male</th>
<th>Age: mean ± (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>11</td>
<td>4:7</td>
<td>55.8±(9.6)</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>8:6</td>
<td>63.3±(6.1)</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>6:6</td>
<td>61.0±(7.1)</td>
</tr>
</tbody>
</table>

Table 1. Patient Characteristics

Group A (11 eyes) had initial laser iridotomy for non-acute PAC and found to have residual angle closure received laser iridoplasty. Those presenting with acute angle closure attack were grouped into two. Group B (14 eyes) had laser peripheral iridoplasty and Group C (12 eyes) received medical measures to break the acute episode. All had laser iridotomy (LI) as definitive treatment. The 3 groups were followed up for 6 months. Visual acuity (VA), intraocular pressure (IOP), anterior chamber inflammation, corneal endothelial cell count, degree of cataract (LOCS system), peripheral AC angle status (width and peripheral anterior synchiae - PAS) by gonioscopy were compared pre and post laser.

Results

Discussion
One-eye each of 37 patients were included in the study. Table 1 showed characteristics of each group. Group A had better visual acuity than B & C because they had quiet eyes during treatment. Groups B & C with acute angle closure had no significant difference in vision six months after treatment (Figure 1).

Figure 2a represented the scatter plot of Post-Pre IOP. The last two groups (B&C) had a obvious decrease in IOP after treatment but the first group almost had no change. Applying Kruskal-Wallis rank sum test to the difference in IOP between post and pre treatment found significant difference among three groups with P value equivalent to 0.001. Using Wilcoxon rank sum test with continuity correction, no significant difference was observed (P value=0.938). The statistical analysis (Figure 2b) again affirmed the last two groups’ (B&C) remarkable response to treatment by significant IOP drop.

Nonparametric Kruskal-Wallis rank sum test did not demonstrate difference between the 3 groups as seen from the boxplot (Figure 3) of corneal endothelial cell count before & after intervention. A decrease in cells (>0–400) without affecting corneal clarity was seen. Lens opacity scoring by LOCS III was comparable across the 3 groups. Whether NO, NC, C or P, (Figure 4a-4d) the results did not vary which could imply that laser iridoplasty in acute and non-acute eyes or medical treatment in acute setting had resulted to similar effects on lens clarity. Barplots showed majority of patients had clear lenses at last follow-up.

Peripheral anterior chamber angle status had considerable improvement in width in the superior and inferior quadrants only in group A, six months after iridoplasty (fig 5a-5d). The change in extent of peripheral anterior synchiae was not significantly different in all groups.

Conclusion
Laser peripheral iridoplasty, in acute and non acute primary angle closure eyes showed no significant adverse effects in vision, cornea and lens status after six months. Immediate treatment of acute angle closure eyes with either laser iridotomy or medicines lowered IOP remarkably. Peripheral anterior chamber angle width improved after laser iridoplasty of non-acute angle closure eyes.

References

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