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Short-term outcomes of MicroPulse Trans-scleral Cyclophotocoagulation in Korean patients

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Purpose

To evaluate the efficacy and safety of MicroPulse Trans-scleral Cyclophotocoagulation (MPCPC) for refractory glaucoma and to compare 2 laser energy settings used for treatment in Korean patients.

Methods

Retrospective case series of 26 consecutive patients with refractory glaucoma who underwent MPCPC at the Kim's Eye Hospital from July 2, 2018, to August 31, 2018, and who had at least 3 months of follow-up. Eyes were randomly assigned to receive one of two laser energy settings; Group1 - 2000 mW, 31.3% duty cycle, total 100 seconds, and Group2 - 2000 mW, 31.3% duty cycle, total 160 seconds. The postoperative change of intraocular pressure (IOP), number of medicines, and complications were compared between 2 groups

Results

The mean age of treated patients was 63.3 ± 11.36 (n=18) vs. 54.88 ± 16.83 (n=8) (Group 1 vs. 2, $P=0.224$). Preoperatively, mean IOP was 36.0 ± 11.78 vs. 49.25 ± 18.11 ($P=0.244$), and mean number of ocular antihypertensive medications used was 2.5 ± 0.86 vs. 2.6 ± 1.19 ($P=0.763$). Mean postoperative decrease in IOP (mmHg) at 1 day, 1 week, 1 month, and 3 months were -10.33 ± 10.56 (-24.3%), -9.94 ± 14.49 (-26.5%), -7.33 ± 13.14 (-15.9%), and -12.73 ± 15.49 (-35.2%) in Group 1 and -13.29 ± 5.09 (-26.8%), -25.31 ± 13.05 (-51.8%), -23.63 ± 13.87 (-49.6%), -22.57 ± 21.68 (-46.2%) in Group 2. The degree of IOP reduction between 2 groups was significantly different at 1 week ($P=0.018$) and 1 month ($P=0.009$), but not at 3 months ($P=0.274$). The proportions of eyes with 20% decrease in IOP were 55.6 vs. 85.7 at 1 day ($P=0.208$), 64.7 vs. 87.5 at 1 week ($P=0.362$), 33.3 vs. 100 at 1 month ($P=0.002$), and 60.0% vs. 85.7 at 3 months ($P=0.350$). No significant difference in number of medications was noted between two groups. There were no serious complications of hypotony, phthisis bulbi, or sympathetic ophthalmia in both groups.

Conclusions

MPCPC is safe and effective in the treatment of refractory glaucoma, even in Asian populations with greater pigment content in the ciliary epithelium compared to the Caucasian eyes. In addition, we found a moderate variation in laser energy settings had little effect on the treatment outcomes and complications. The patients who treated with relatively higher energy setting (Group 2) showed greater IOP reduction than Group 1 until 1 month, however, there was no significant difference at 3 months postoperatively.

Layman Abstract (optional): Provide a 50-200 word description of your work that non-scientists can understand. Describe the big picture and the implications of your findings, not the study itself and the associated details.

