



PATTERN LASER

New approach minimises tissue damage and maximises precision

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Posted in: 2013 Oct Glaucoma

Pattern laser trabeculoplasty (PLT) using a 577nm laser with computer-guided scanning technology (PASCAL Streamline 577, Topcon Medical Laser Systems) appears to be effective treatment for open-angle glaucoma (OAG) offering potential advantages relative to other laser techniques, reported Japanese researchers at the 2013 annual meeting of the Association for Vision in Research and Ophthalmology.

In PLT, the laser delivers a treatment pattern of 39 100-micron spots over 22.5° of arc (2.75mm) and then rotates automatically so that the next pattern is precisely aligned and applied onto an untreated location. The software was first introduced for the 532nm pattern scanning laser and subsequently became available as an upgrade for the 577nm laser.

Miho Nozaki MD, PhD, and colleagues reported their experience with 577nm PLT in a series of 11 eyes of nine patients. Primary open angle glaucoma (POAG) was the most common diagnosis in the series, followed by pseudoexfoliation glaucoma, steroid-induced glaucoma and pigmentary glaucoma. Laser power was initially titrated to produce trabecular meshwork blanching with a 10 ms pulse, and then subvisible treatment was applied using a 5.0 ms pulse duration.

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The treatment was delivered in 32 steps to cover 360° of the trabecular meshwork with a mean of 1287 spots per eye. Mean laser power was 344 mW and mean pulse energy was 1.7 mJ.

The treatment reduced mean IOP from 20.5 mmHg at baseline to 15.0 mmHg at one month. Among eight eyes evaluated at six months, mean IOP was 13.4 mmHg (-31 per cent relative to baseline). Patients were using a mean of 2.6 medications prior to PLT, and that number was unchanged at six months. The only adverse event recorded was transient IOP elevation in one eye.

“The concept of PLT is similar to selective laser trabeculoplasty (SLT) as it minimises thermal injury that leads to structural tissue damage in the trabecular meshwork. However, because there are no clinically visible tissue changes, the laser operator performing SLT may unintentionally leave some areas of the trabecular meshwork untreated. This problem is avoided with PLT thanks to computer guidance of treatment delivery,” said Dr Nozaki, associate professor of ophthalmology and visual science, Nagoya City University Graduate School of Medical Sciences, Japan.

“Perhaps the enhanced accuracy of PLT treatment may result in greater durability of the IOP-lowering effect. However, a larger, controlled study with longer follow-up is needed to definitively evaluate the efficacy of PLT and its durability,” Dr Nozaki told EuroTimes.

She added that in contrast to argon laser trabeculoplasty, so far PLT appears not to result in the development of peripheral anterior synechiae, and it is better tolerated than ALT. Patients undergoing PLT were asked to rate treatment pain using a visual analogue scale where zero represents no pain and 10 is the worst possible pain imaginable. Based on data from eight eyes, the pain score averaged 3.3 and exceeded five in only one eye, which was the first treated.

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