

Selective Laser Trabeculoplasty on Normal Tension Glaucoma (NTG) Patients

Normal (low) tension glaucoma (NTG or LTG) is a chronic optic neuropathy similar to primary open angle glaucoma (POAG) in that it exhibits characteristic optic disc cupping and visual field loss, but with consistently normal intraocular pressure (IOP) of less than 22 mmHg. It is probably due to genetic hypersensitivity to normal levels of IOP, and possibly also to vascular factors such as vasospasm and ischemia.

Epidemiology of NTG

Among the Caucasian population, NTG affects 15 to 20 percent of POAG patients, with higher rates in Japan and Korea. In Japan the prevalence of POAG is 3.9 percent among people older than 40, and almost all of them (92 percent) have NTG (IOP of 21 mmHg or less)¹.

The goal of treatment, which usually follows the same paradigm as other forms of POAG², is to reduce IOP by 30 percent.

Efficacy of SLT for NTG

There are only a few reports of the efficacy of selective laser trabeculoplasty (SLT) in the treatment of NTG. In Melamed's article³, only two NTG patients with a considerable pressure reduction were included. Best, et al.⁴ reported treating 11 NTG patients with over 12 percent IOP reduction; however, they used only 180° treatment and could have probably achieved better results with 360° treatment.

Kuwayama performed a larger study on 210 OAG patients, 34 of whom had NTG. There was no statistically significant difference between the response rate (IOP reduction >20 percent) among the various OAG types. While he noted that 360° treatment is more efficacious than 180°, he also

showed that the higher the original IOP was, the greater the reduction (unpublished data).

Normal Tension Glaucoma Study Group

When treating POAG, SLT has similar IOP-lowering results as ALT. The Normal Tension Glaucoma Study Group did report that a 30 percent reduction can be attained in most NTG eyes with a combination of drugs and ALT⁵. It can therefore be assumed that SLT will achieve similar IOP lowering results in NTG, with the added benefit of potential repeatability and without the side effects associated with ALT.

The importance of SLT in the management of NTG is even more manifest when one considers the Normal Tension Glaucoma Study Group finding that lowering IOP without producing cataracts was beneficial. Because not all untreated patients progressed, the natural history of NTG must be considered before embarking on IOP reduction with therapy apt to exacerbate cataract formation – unless NTG threatens serious visual loss². Since SLT is harmless, non-destructive and non-cataractogenic, it can be performed without risk of adverse effect even on patients who are not clearly progressing.

References

- 1 Iwase et al., The prevalence of primary open-angle glaucoma in Japanese: The Tajimi Study. *Ophthalmology* 2004;111:1641-1648
- 2 The Collaborative Normal-Tension Glaucoma Study Group. The effectiveness of intraocular pressure reduction in the treatment of normal-tension glaucoma. *Am J Ophthalmol.* 1998 Oct;126(4):498-505
- 3 Melamed S, et al. Selective laser trabeculoplasty as primary treatment for open-angle glaucoma *Arch Ophthalmol.* 2003;121:957-960
- 4 Best et al. Long-term results after selective laser trabeculoplasty - a clinical study on 269 eyes. *Klin Monatsbl Augenheilkd.* 2005;222(4):326-31.
- 5 Schulzer M. Intraocular pressure reduction in normal-tension glaucoma patients. The Normal Tension Glaucoma Study Group. *Ophthalmology* 1992; 99:1468-70

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