

Self measurement of intraocular pressure by patients with normal tension glaucoma before and after selective laser trabeculoplasty

Introduction

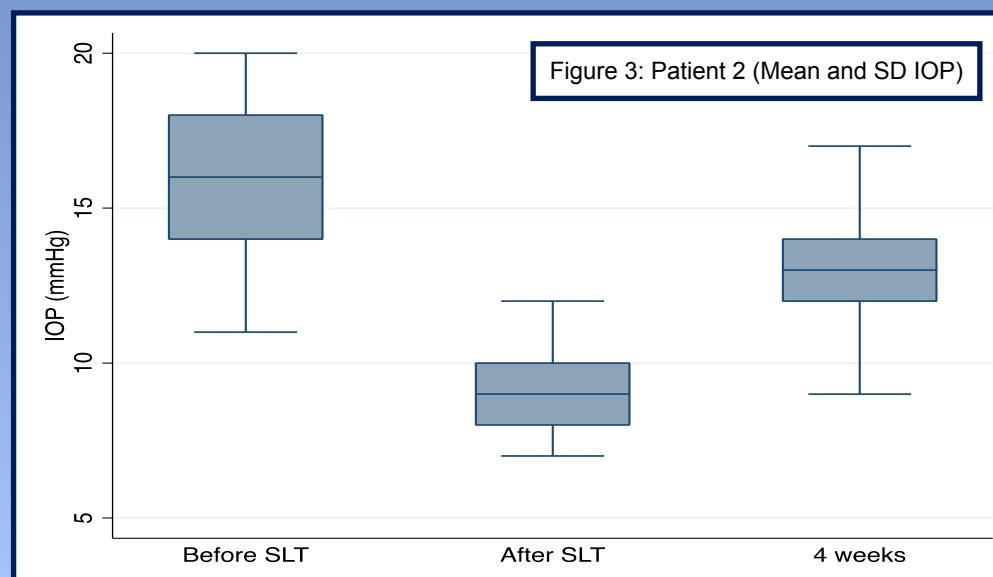
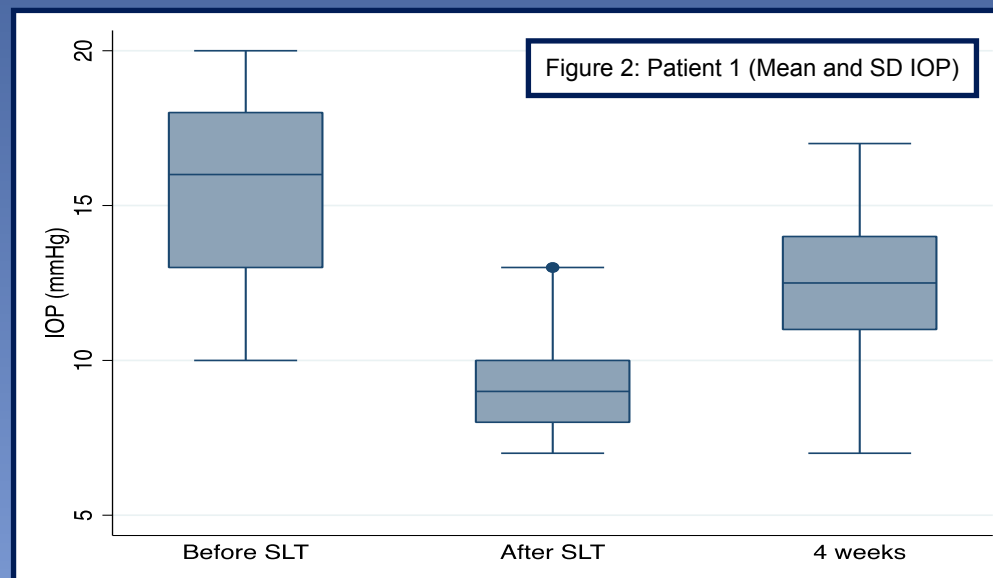
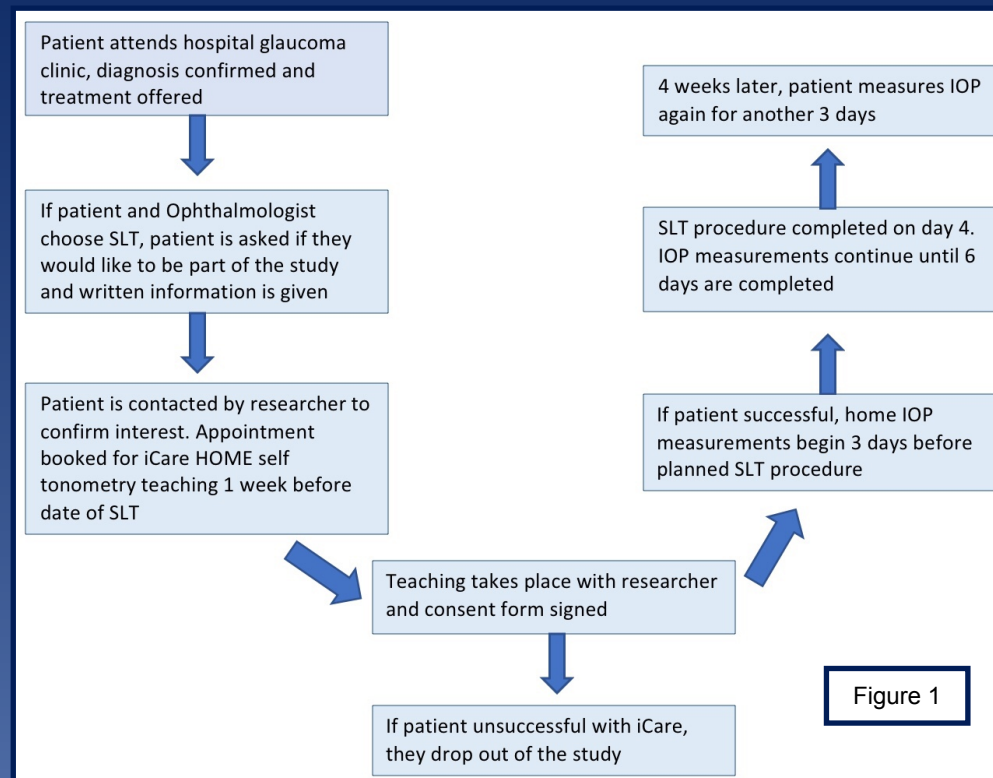
- Raised intraocular pressure (IOP) and large IOP fluctuation are risk factors for glaucoma [1].
- Selective Laser Trabeculoplasty (SLT) lowers IOP by increasing aqueous outflow facility [2]. SLT has been found to lower IOP by 20%, and improves IOP control in comparison to IOP lowering drops [3].
- IOP is often at it's highest in the very early morning between midnight and 8am [4]. In clinic, we are only able to measure IOP during working hours, so we may miss the highest IOP reading.
- Patients are now able to measure their own IOP at home using the iCare HOME Tonometer [5].
- In this study we aim to assess the effect of SLT on IOP, by asking patients to measure their own IOP throughout a 24 hour period.

Research question:

- Is there a significant difference between the average, variability and peak of IOP measurements before and after treatment with SLT?

Method:

- 20 patients will be recruited for this study from the glaucoma clinic of the local hospital Ophthalmology department.
- Patients were either treatment naive, or already using IOP lowering drops. If using drops, there was a wash out period before SLT so that pre-treatment IOP is representative of the untreated IOP.
- *Figure 1* explains the patient journey.
- The patient was asked to measure their own IOP for 3 days before and 3 days after SLT. The patients were asked to measure IOP every 2 hours from 7am to 11pm, and at 2am and 4am (total 66 measurements). One month after SLT, the patients measured IOP for another 3 days at the same times (total 33 measurements).
- The peak, average (mean) IOP and fluctuation (standard deviation) of IOP before and after SLT were compared.



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Preliminary results:

- Preliminary results are available from 2 patients who underwent SLT in one eye only. The control is their own untreated eye.
- Treated eyes achieved a 41.1% reduction in mean IOP straight after SLT and a 19.75% reduction 4 weeks after SLT ($p < 0.001$, CI 95%) (*Figures 2 & 3*).
- Peak IOP was reduced by an average of 2.5mmHg in the treated eyes 4 weeks after SLT.
- IOP fluctuation (defined as standard deviation of IOP) was not found to be statistically significantly different 4 weeks after SLT in either patient (*Figures 2 & 3*).
- Peak IOP was not in the early morning as previous research suggests, but frequently mid morning-early afternoon both before and after SLT.
- Data collection is ongoing, and at present 6 patients have been recruited, 3 have dropped out.

Conclusions

- SLT was found to reduce average and peak IOP straight after treatment and 4 weeks after treatment.
- SLT was found to reduce variability (standard deviation) in IOP measurements straight after treatment.
- There was no evidence of an IOP spike straight after SLT.
- This study suggests that SLT is effective in lowering IOP, both immediately after treatment and 4 weeks after treatment. As per the LiGHT study [3] we suggest that SLT should be offered to patients as an option for first line treatment of glaucoma.
- SLT is effective and safe, and negates some of the issues of IOP lowering drops, for example ocular surface disease and lack of compliance.

References:

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