Reviewer’s report

Title: Repeatability of Intraocular Pressure Measurements with Icare Pro Rebound, Tono-Pen AVIA and Goldmann Tonometers in sitting and reclining positions

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Reviewer: Marcel Menke

Reviewer’s report:

Minor essential revisions:

Schweier C et al compared 3 methods of IOP measurements to test repeatability. It is an interesting and essentially well written manuscript with some minor flaws.

Abstract:
"Hypothesis was that GAT is superior to ICP and TPA."
Superior in what way? Since you tested repeatability, I would state that here.

Please insert a statement regarding the tonometry effect (repeated GAT tend to lower IOP), what about the other two methods? How long was waited between measurements to avoid "idiopathic" IOP reduction?

It would have been nice to have CCT measurements in such an experimental setup, although I agree to the authors that in real live no one would perform pachymetry in healthy subjects. However, that information would have improved the paper.

The statistic part is very detailed and might be a bit too long, but some readers might not be too familiar with the Mixed-Model for ICC calculation. I therefore understand why the authors put that much effort in this part. No complains regarding statistics itself.

Results:

4. paragraph, line 2: ...measurement 1 and 2 of the three methods (Figure 1). Authors should add "...in sitting position."

Discussion:

The discussion is quite long, in particular on the second page of the discussion, one can find redundant information that has already been presented in the results.

Authors state that "...differences in IOP between GAT and ICT as well as between GAT and TPY in upright and reclining position was investigated..."

I am not sure about what is the point in comparing GAT (which only works upright) with the two other methods in reclining position. It is a bit like comparing
apples with bananas and no suprise that repeatability is worse in reclining position.

Next the authors state that:..."the linear mixed model shows a difference between GAT and ICP of 0.847mmHg in upright and 1.651mmHg in reclining position." This sentence is somewhat confusing, since GAT cannot be performed in reclining position. Please clearify what you mean with that statement.

Authors state that only eyes with IOP between 9 and 27mmHg were included. 27mmHg seems to be quite high for healthy controls. Can that still be considered normal?

Last sentence of the discussion: Why would a hand-held DCT be a better device to compare measurements to GAT? Since GAT cannot measure in reclining position, there is no need for a hand-held DCT for comparison.

Conclusion:
Last sentence: I could not find any information regarding conversion factors for the three devices in this manuscript. It is recommended to only conclude on your own data. Authors might want to add a calculation for conversion between devices. That might indeed be helpful in clinic.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests