IOP measurement: importance of methodology

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Received: 5 February 2015 / Accepted: 26 May 2015 / Published online: 2 June 2015
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Dear Editor,

We read with interest the article by Sinha et al. regarding IOP agreement between I-care TA01 rebound tonometer and the Goldmann applanation tonometry (GAT) in eyes with and without glaucoma [1]. The authors conclude that the two methods cannot be used interchangeably due to large limits of agreement.

There is, however, a significant point to make regarding methodology in this study. The authors do not describe exactly how IOP measurements were made: Did both independent masked and experienced ophthalmologists measure IOP with both instruments? What was the inter-observer and intra-observer agreement in their measurements? Most importantly, the order in which RT and GAT were performed is not mentioned, and it is not described whether or not the examiner measured IOP with GAT once or if a repeated measurement was made and a mean calculated, as is preferred by several authors [2, 3].

Rebound tomometry (RT) has been found to overestimate IOP compared to GAT when RT is used first but not when used immediately after GAT [4]. This difference may have significant implications in

the study by Sinha et al.: if RT was consistently used after repeated GAT measurements, then this could account for, at least in part, the large limits of agreement found between the two methods in the higher range of intraocular pressures.

References

1. Sinha G, Gupta S, Temkar S, Pandey V, Sihota R, Dada T (2014) IOP agreement between I-Care TA01 rebound tonometer and the Goldmann applanation tonometer in eyes with and without glaucoma. *Int Ophthalmol*. doi:[10.1007/s10792-014-0026-6](https://doi.org/10.1007/s10792-014-0026-6)
2. Kotecha A, White E, Schlottmann PG, Garway-Heath DF (2010) Intraocular pressure measurement precision with the Goldmann applanation, dynamic contour, and ocular response analyzer tonometers. *Ophthalmology* 117:730–737
3. Martinez-de-la-Casa JM, Garcia-Feijoo J, Saenz-Frances F, Vizzeri G, Fernandez-Vidal A, Mendez-Hernandez C, Garcia-Sanchez J (2009) Comparison of rebound tonometer and Goldmann handheld applanation tonometer in congenital glaucoma. *J Glaucoma* 18(1):49–52
4. Marini M, Da Pozzo S, Accardo A, Canziani T (2011) Comparing applanation tonometry and rebound tonometry in glaucomatous and ocular hypertensive eyes. *Eur J Ophthalmol* 21(3):258–263

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