I read with interest the article by Saketa et al.1 evaluating 24-hour intraocular changes in habitual (sitting during day and supine during night) position (H24h-IOP) and IOP after a postural-change test (PCT-IOP) and a water-drinking test (WDT-IOP). Although postural changes in IOP have been known for many years, correlation between the WDT and PCT increase had not yet been evaluated.

It was therefore interesting to note a positive correlation between peaks of 24-hour WDT and PCT-IOP in this study, which also found a worse visual field associated with greater 24-hour fluctuation in normal-tension glaucoma (NTG). It has reiterated the importance of 24-hour IOP measurement in NTG even in patients with established disease with advanced field defects. Yet the study fails to prove the importance of evaluating PCT or WDT IOP in routine clinical practice. A careful relook into the methodology and results would give us the answers explaining this paradox.

The authors chose to use a pneumatonometer (PTG) to measure IOP in the supine position, whereas Perkins tonometry would have been ideal.2 Although they have tried to evaluate the agreement with Goldmann applanation tonometry (GAT), use of two instruments for evaluating postural changes, the main objective, dilutes the results, because they work on different principles. The peak 24-hour IOP was at 6 AM in 8 of 33, eyes which concurs with previous studies reporting a morning peak.3 Yet the authors chose to do a WDT test at 7 AM, which may be presumed to be influenced by the IOP rise caused by routine diurnal changes. Ideally this test should have been done at 6 PM (or 9 PM), with a minimal number of eyes showing a diurnal peak at these times.

Every patient underwent several IOP measurements to fulfill the purpose of the study, which seems largely unnecessary with regard to the clinical relevance of the study. In particular, at 3:00 to 3:30 PM, the patients were subjected to GAT followed by PTG measurement followed by the latter after 30 minutes followed by repeat IOP measurement 2.5 hours later. The PCT IOP could have been measured 30 minutes after the patient retired at 10 PM. It is unclear why GAT was essential for pre-PCT IOP if peak PCT IOP was the difference in measurement obtained by PTG only. It is also unclear why peak H24h-IOP was measured in the supine position in only 55 of 66 eyes and there were a total of 132 measurements for 66 eyes of 33 patients (average of five readings, which means some patients never underwent full diurnal H24h-IOP).

The fluctuation of H24h-IOP was $6.8 \pm 3.9$ mm Hg (95% confidence interval [CI] 5.4–8.1 mm Hg), whereas the difference of PCT IOP was $4.6 \pm 2.6$ mm Hg (95% CI 3.7–5.4 mm Hg). It is no surprise that the peaks of IOP by the three methods correlated well, but we have to understand that a PCT IOP depends not only on body mass index (may be more with obese), but also the level of autonomic dysregulation that is coexistent in elderly individuals.4,5 The authors state that “we limited our study to patients with normal IOP ($\leq 21$ mm Hg), because of difficulty in recruiting typical HTG patients for clinical studies where a provocative test to further increase the IOP is included.” Yet, they fail to recognize the implications of a provocative test in an NTG patient with established visual field defects.4

In conclusion, there seems to be little evidence from this study that proves other tests to be more useful than 24-hour diurnal IOP recording for screening and monitoring NTG patients with established visual field defects.

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References

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