Author Response: Postural Changes of 24-Hour Intraocular Pressure in Normal Tension Glaucoma

First, we would like to thank Rao1 for the interest in our investigation, “Intraocular pressure change over a habitual 24-h period, after changing posture or drinking water, and related factors in normal tension glaucoma.”2

To begin with, we tried to estimate the peak 24-hour intraocular changes in habitual position (H24h-IOP) from the results for both the peak postural-change test (PCT-IOP) and water-drinking test (WDT-IOP). As described in our text, the estimation accuracy was relatively low, probably because the small number of patients rendered detailed analysis difficult. Nevertheless, our result does not necessarily rule out clinical usefulness of PCT or WDT, as IOP changes during PCT and WDT allow us to guess the range of IOP fluctuation in patients’ daily lives.

As pointed out, it may be more desirable to measure IOP using a Perkins tonometer. We carefully calibrated the pneumotonometer (PTG) before the experiment and confirmed its correlation with Goldmann application tonometry (GAT) in each patient. One advantage of the PTG is that it can record the value of IOPs measured.

Generally, it is not well established when WDT should be performed.3 It is difficult to predict peak H24h-IOP of each patient in advance. Besides, fasting for at least 4 hours is needed for WDT. Therefore, the morning hours are thought to be more suited to conduct WDT rather than 6:00 PM or 9:00 PM.

We initially measured IOP at 3:00 PM using GAT, and then performed PTG 5 minutes later in the sitting position. These results, together with those taken at 9:00 AM (GAT) and 9:05 AM (PTG) (total of 66 pairs of GAT and PTG measurements) are used to confirm good correlation between GAT and PTG results in each patient. Thirty-three patients underwent the full H24h-IOP measurement (i.e., eight measurements per patient during the H24h-IOP). These points were clearly described in the article.

In clinical settings, PCT is generally conducted during office hours. We think that the measurement of PCT other than office hours is a rare case.

As pointed out, the factors affecting PCT include neural system response.4 IOP increase of PCT should be at least partly attributable to an elevation of episcleral venous pressure and choroidal vascular congestion caused by circulatory or neural system responses to a change from a sitting position to spine position (the third paragraph on page 5317 of the published article).

As we stated in the introduction section, we conducted WDT in addition to PCT, acknowledging that a previous study reported correlation between PCT results and visual field defects in normal-tension glaucoma patients.5 Further, we investigated ocular/systemic factors related to them.

Rao concluded that there seems to be little evidence from this study that proves other tests to be more useful than 24-hour diurnal IOP. Her conclusion agrees with ours that worse visual field was statistically significantly associated with a higher peak H24h-IOP and a greater fluctuation of H24h-IOP, but not a peak PCT-IOP (or WDT-IOP) or difference of PCT-IOP (or of WDT-IOP).

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References


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