Introduction

- Supine position-induced intraocular pressure (IOP) rise - contributes to right night IOP elevation and is associated with progression of normal-tension glaucoma (NTG).1,2
- However, side sleep position has been shown to be preferred as age advanced.3
- Previously, we demonstrated that postural change from supine to lateral decubitus (LD) position increased IOP of the dependent eye in healthy young subjects.4 Thus, this study aimed to explore the effect of change in body posture from supine to LD position on IOP in eyes with NTG.

Methods

- A prospective observational study.
- 22 consecutive patients with newly diagnosed untreated bilateral NTG at Korea University Anam Hospital, Korea.
- Exclusion:
  1) Concomitant ocular disease; 2) previous ocular surgery; 3) BCVA < 25/50; 4) myopia < -9 D or astigmatism > 2 D; 5) use of contact lens; 6) systemic use of β-blocker
- IOP measurement:
  - Tonopen XL (Reichert Inc. NY, USA) in both eyes
  - Mean of 2 measurements within 2 mmHg and both under 5% error: if not, median of 3 measurements
- Sequence of positions:
  - Sitting (T1) → Supine (T2) → Right LD (T3) → Supine (T4) → Left LD (T5) → Supine (T6).
  - Measured 10 min after assuming each position. The right eye was always examined first.
  - The eye on the lower side in the LD position was termed as a dependent eye.
- By comparing mean deviation (MD) of Humphrey visual field (VF) between both eyes of a patient, eyes were classified into either worse-MD or better-MD eyes.

Results

- 9 female; 13 male; mean age: 49.5 ± 11.2 years.

Discussion

- This is the first study to demonstrate such IOP-increasing effect of LD position in the dependent eyes of patients with bilateral open-angle glaucoma.
- LD posture-induced IOP rise in the dependent eye in NTG patients was not greater than that in healthy young subjects (1.9-2.0 mmHg vs. 2.0-2.3 mmHg). However, this should be interpreted with caution because of small sample sizes and different study designs.
- In this study, the eyes with greater VF defects showed the tendency for larger IOP alterations with postural changes from supine to LD position, although the difference was marginal. This finding suggests that asymmetric LD position-induced IOP changes might be related to asymmetric glaucomatous damages between fellow eyes.
- Limitations:
  1) small sample size; 2) ocular perfusion pressure, unchecked; 3) short duration of LD position; 4) IOP measurement in the awakened state; 5) non-randomized sequence of IOP measurements.

CONCLUSION:
LD position increased IOP of the dependent eye in NTG patients. This suggests that side sleep may increase IOP in the dependent eyes. However, further studies are required to investigate the effect of lateral body posture on ocular perfusion and progression of glaucoma.