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HOME ASSESSMENT OF TREND OF DIURNAL FLUCTUATION OF INTRAOCULAR PRESSURE BY REBOUND TONOMETRY IN GLAUCOMA PATIENTS

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Purpose
Intraocular pressure (IOP) is a well-known treatable risk factor of glaucoma. Ophthalmologists nowadays often rely on a single office IOP measurement of a patient to make decisions. Diurnal intraocular pressure (IOP) fluctuation has been suggested as an independent risk factor for glaucoma and disease progression. The purpose of this study is to evaluate the application of intraocular pressure (IOP) using Icare Home rebound tonometer at home by patient and their caregivers and to assess acceptability and accuracy of self-tonometry in glaucoma patients.

Methods
This study was a prospective study measuring intraocular pressure (IOP) using iCare Home tonometer at home by the patients in a medical center. We recruited 48 glaucoma patients and they received training education at an ophthalmology clinic to measure intraocular pressure (IOP) at home by Icare Home tonometer (Finland). IOP readings by Icare Home tonometer were collected and the diurnal variation curves of IOP of the patient were recorded to evaluate the effectiveness of anti-glaucoma medication. Patients recorded their IOP five times a day, at the following time points: 7:00~10:00, 11:00~13:00, 14:00~17:00, 18:00-21:00, and 22:00-24:00. Detailed ocular examinations were performed including best corrected visual acuity, refractive error, severity of glaucoma and visual field defect. We will exclude patients with suspect infectious disease, and underwent recent surgery. Questionnaires regarding preference and acceptability of the self-tonometer were used to evaluate patients' perception. Factors associated with acceptance and assessment in IOP measurement at home were recorded for analysis.

Results
Total 45 patients with clinical diagnosis of glaucoma were recruited, and total 41 cases were corrected for analysis. The average age of participants was 45.2 years old. Regarding diurnal IOP change, the distribution of peak IOP in 24 hour was 56.1% in the morning, 24.4% at noon, 4.8 % in the afternoon, and 14.6% in the evening. The distributions of trough IOP were 4.9 % in the morning, 65.9% at noon, 12.2% in the afternoon, and 17% in the evening.

Conclusions
The rebound tonometer was well tolerated and successfully used by patients themselves at home, and in selected glaucoma patient home use provided valuable information that either verified adequate glaucoma control or dictated further surgical intervention. Future studies will be helpful in further defining the clinical role for home tonometry in the management of glaucoma.

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