

The effect of positional changes on intraocular pressure during sleep in patients with and without glaucoma

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PURPOSE: To determine whether sleeping at a 20-degree head-up position decreases nocturnal intraocular pressure (IOP) compared with lying supine (flat) in patients with and without glaucoma.

DESIGN: Prospective, nonrandomized comparative case series.

MATERIALS AND METHODS: Thirty patients were recruited based on self-reported disease status with 15 glaucoma and 15 nonglaucoma patients; a total of 60 eyes were tested. Patients were evaluated in a sleep laboratory on 2 separate nights, lying flat 1 night and lying on a wedge pillow at a 20-degree head-up position another night. Baseline IOP was measured during the awake period (10 PM) , then measured at 2-hour intervals during the sleep period (12, 2, 4, and 6 AM) .

RESULTS: IOP measurements during the 10 PM awake period did not significantly differ between the 2 positions ($P=0.55$) . During the sleep period (12 to 6 AM) , the mean IOP was 1.51 mm Hg lower in the 20-degree head-up position when compared with the flat position (95% confidence interval, 0.99 to 2.04 mm Hg) , with an average drop of 1.56 and 1.47 mm Hg in glaucoma and nonglaucoma patients, respectively. This corresponds to a 9.33% and 8.67% IOP reduction in glaucoma and nonglaucoma patients, respectively. Twenty-five of 30 patients (83.3%) had lower mean IOPs in the 20-degree head-up position. Mean IOP reduction was >10% for 11 of 30 patients (36.7%) when sleeping in the head-up position.

CONCLUSIONS: The 20-degree head-up position correlates with lower nocturnal IOP as compared with the supine position in glaucoma and nonglaucoma patients. No significant difference in IOP reduction was observed in glaucoma patients when compared with nonglaucoma patients.

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