Effect of sleeping in a head-up position on intraocular pressure in patients with glaucoma


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Abstract

PURPOSE: To determine whether a 30-degree head-up sleeping position decreases nocturnal intraocular pressure (IOP) compared with lying flat in patients with glaucoma.

DESIGN: Prospective, nonrandomized comparative case series.

PARTICIPANTS: Seventeen eyes of 17 patients with glaucoma with controlled IOP and new disc hemorrhage. METHODS: Patients with a new disc hemorrhage despite well-controlled IOP were evaluated in a sleep laboratory on 2 separate nights, the first night lying flat and the second night in a 30-degree head-up position. Intraocular pressure and blood pressure (BP) were measured every 2 hours from 6 PM to 8 AM. For the 6 PM, 8 PM, 10 PM, and 8 AM measurements (awake period) the subjects were sitting for both nights. For the midnight, 2 AM, 4 AM, and 6 AM measurements (sleep period), the subjects were supine for the first night and 30 degrees head up for the second night.

MAIN OUTCOME MEASURE: Difference in IOP during the sleep period (midnight to 6 AM) between lying flat and 30-degree head-up positions.

RESULTS: Seventeen eyes of 17 patients were included. There were no significant differences (P=0.68) between the 2 study visits in IOP during the awake period (6 PM, 8 PM, 10 PM, and 8 AM) when patients were sitting upright. During the sleep period (midnight to 6 AM) the mean IOP was 3.2 mmHg lower in the 30-degree head-up position compared with the flat position (P=0.03; 95% confidence interval, 0.25-6.1 mmHg). Sixteen of 17 patients (94.1%) had lower IOP in the 30-degree head-up position. The reduction in IOP in the 30-degree head-up position was 20% or more in 35% of patients (6/17). There were no differences in BP or ocular perfusion pressure between the 2 positions.

CONCLUSIONS: The 30-degree head-up sleeping position lowers IOP compared with the flat position. Although this effect varies between individual patients, mean IOP was 20% lower in one third of patients in this series.

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