A study by Ferguson, et al published in the journal Chest (1996)[1] compared a dental appliance to CPAP in a randomized crossover study on a sample of 25 patients with mild to moderate OSA. CPAP reduced the average AHI to 3.5 (±1.6) compared to 9.7 (±7.3) for the oral device, a significantly greater reduction. The average oral device user was still within the range of mild OSA while the CPAP user was not. They found that the appliance was better tolerated than CPAP.

Study objective
To compare efficacy, side effects, patient compliance, and preference between oral appliance (OA) therapy and nasal-continuous positive airway pressure (N-CPAP) therapy.

Design
Randomized, prospective, crossover study.

Setting
University hospital and tertiary sleep referral center.

Patients
Twenty-seven unselected patients with mild-moderate obstructive sleep apnea (OSA).

Interventions
There was a 2-week wash-in and a 2-week wash-out period, and 2×4-month treatment periods (OA and N-CPAP). Efficacy, side effects, compliance, and preference were evaluated by a questionnaire and home sleep monitoring.

Measurements and results
Two patients dropped out early in the study and treatment results are presented on the remaining 25 patients. The apnea/hypopnea index was lower with N-CPAP (3.5±1.6) (mean±SD) than with the OA (9.7±7.3) ($p<0.05$). Twelve of the 25 patients who used the OA (48%) were treatment successes (reduction of apnea/hypopnea to <10/h and relief of symptoms), 6 (24%) were compliance failures (unable or unwilling to use the treatment), and 7 (28%) were treatment failures (failure to reduce apnea/hypopnea index to <10/h and/or failure to relieve symptoms). Four people refused to use N-CPAP after using the OA. Thirteen of the 21 patients who used N-CPAP were overall treatment successes (62%), 8 were compliance failures (38%), and there were no treatment failures. Side effects were more common and the patients were less satisfied with N-CPAP ($p<0.005$). Seven patients were treatment successes with both treatments, six of these patients preferred OA, and one preferred N-CPAP as a long-term treatment.

Conclusions

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[1] Ferguson KA, Ono T, Lowe AA, Keenan SP and Fleetham JA, A Randomized Crossover Study of an Oral Appliance vs. Nasal Continuous Positive Airway Pressure in the Treatment of Mild-Moderate Obstructive Sleep Apnea, Chest, 109 (5) May 1996, p.1269-1275 https://doi.org/10.1378/chest.109.5.1269

We conclude that OA is an effective treatment in some patients with mild-moderate OSA and is associated with fewer side effects and greater patient satisfaction than N-CPAP.

Section snippets

Subjects

Twenty-seven patients with symptomatic mild to moderate OSA (apnea and hypopnea index [AHI], 15 to 50/h of sleep during diagnostic laboratory polysomnography) were recruited for this study. Patients were unselected apart from a requirement that they have at least ten teeth in each of the maxillary and mandibular arches, and reside in the metropolitan Vancouver area. All patients were seen in the Sleep Disorders Clinic at the Vancouver Hospital and Health Sciences Center between November 1991

RESULTS

Twenty-seven patients were recruited, including 24 men and 3 women. These patients were, in general, middle aged, overweight, and had mild to moderate OSA (Table 1). One patient dropped out during the wash-in period after the N-CPAP titration night and another patient dropped out early in the first treatment period with the OA when he moved out of town. All subsequent results are presented on the remaining 25 patients.

There was no carryover effect between the treatment periods and no period

DISCUSSION

This study is one of the first randomized, prospective crossover studies comparing an OA to N-CPAP in the treatment of an unselected group of patients with OSA. We have shown that OAs are an effective treatment in some patients with mild to moderate OSA. Forty-eight percent of the OA group were treatment successes compared to 62% of the N-CPAP group. The 3 patients in the OA group with an AHI greater than 40/h were all treatment failures. However, 2 of these 3 patients had a 75% reduction in