

Introduction

The Oxford Sleep Resistance (OSLER) test is an alternative to the conventional maintenance of wakefulness test (MWT) that assesses the ability to stay awake. Modifications to the original OSLER test have been proposed that may improve its performance.^{1,2} We aimed to see if there were differences in sleepiness between patients with OSA treated with supplemental oxygen or air during two-weeks of CPAP withdrawal, and whether modifications to the OSLER test improved its ability to reveal any differences between these two groups.

Methods

We conducted a single-centre, randomised, double-blind, cross-over trial comparing supplemental oxygen or air treatment during two-weeks of CPAP withdrawal in patients with prior CPAP-treated moderate-to-severe OSA. The OSLER test was assessed at baseline and follow-up for both oxygen and air treatment. The original OSLER test terminates at the time when the subject fails to respond to 7 consecutive, regular, light flashes occurring every 3s, or after 40 minutes. We analysed the OSLER test conventionally, and also looked at the time to 6, 5, and 4 consecutive misses, error rate, and number of misses from 3-6; we then assessed differences between the air and oxygen groups fusing all the derivatives.

Results

Twenty-five patients completed the full cross-over trial. There was no significant difference between the air and oxygen groups using the original OSLER score (-96 seconds, $p=0.67$, 95% CI -556 to +365). Results of the modified OSLER analysis are shown in Table 1. Modifications to the OSLER test slightly increased the Cohen's d effect size when all baseline and follow-up data were compared. However, despite the improved sensitivity, there were still no significant differences between the oxygen and air arms during CPAP withdrawal.

Conclusions

Supplemental oxygen therapy did not change the return of objective sleepiness when compared to supplemental air therapy during two-weeks of CPAP withdrawal. The overall effect of CPAP withdrawal was largest on the sleep latency to four missed lights, although the improvement in sensitivity over the original OSLER analysis was marginal. Despite using this more sensitive OSLER analysis, there were still no significant differences in the objective measures of sleepiness between supplemental oxygen therapy and air during two-weeks CPAP withdrawal.

1) Mazza *et al.* AJRCCM 2002 166:474-8. 2) Alakuijala *et al.* J Clin Sleep Med 2014 15;10:1075-8.