

Heart rate rises return rapidly during CPAP withdrawal even in those with gradual return of oxygen desaturations

Introduction

The observation that oxygen desaturations do not necessarily return during CPAP withdrawal has been used to suggest that CPAP may not be an *every* night treatment. We explored the possibility that heart rate rises may occur without oxygen desaturations; suggesting sleep fragmentation may still be a problem.

Methods

We analysed pulse oximetry data from 92 patients undergoing CPAP withdrawal (3 nights on CPAP, 4 nights off CPAP). The oxygen desaturation index $\geq 4\%$ (ODI) and heart rate rises $>6\text{bpm}$ (HRR), were compared during CPAP withdrawal using ANOVA and Fishers post hoc tests; in all patients, and in 27 patients with gradual ODI return.

Results

Results are shown in the table. Both the mean ODI and HRR increased significantly on the first night off CPAP. In those with gradual ODI return, HRR returned rapidly.

Discussion

We have shown that in some patients, heart rate rises return before oxygen desaturations, during CPAP withdrawal. Our findings suggest that ODI alone may not adequately identify patients in whom OSA does not return.

	On CPAP average	Off CPAP 1	Off CPAP 2	Off CPAP 3	Off CPAP 4
<i>All patients (n=92)</i>					
ODI	7.0±7.1*	28.9±17.0**	30.2±17.1***	32.4±19.0	32.2±19.5
HRR	24.1±19.0*	38.6±21.2	37.9±20.7	37.7±20.2	38.0±20.2
<i>Gradual ODI return (n=27)</i>					
ODI	5.7±3.5*	11.4±3.9*	17.6±11.1	17.0±10.5	18.9±13.1
HRR	19.0±13.1*	27.5±16.4	28.1±17.0	25.9±15.4¶	30.1±16.7

Data displayed as mean±SD. All ANOVA tests were significant ($p<0.001$). * show which values were significantly using post hoc tests($p<0.05$); *=different to all other values, **=different from nights 3 and 4 off CPAP, ***=different from night 3 off CPAP, ¶=different from night 4 off CPAP.