

RESEARCH ARTICLE

Significant improvement of olfactory performance in sleep apnea patients after three months of nasal CPAP therapy – Observational study and randomized trial

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Abstract

Objectives

The olfactory function highly impacts quality of life (QoL). Continuous positive airway pressure is an effective treatment for obstructive sleep apnea (OSA) and is often applied by nasal masks (nCPAP). The influence of nCPAP on the olfactory performance of OSA patients is unknown. The aim of this study was to assess the sense of smell before initiation of nCPAP and after three months treatment, in moderate and severe OSA patients.

Methods

The sense of smell was assessed in 35 patients suffering from daytime sleepiness and moderate to severe OSA (apnea/hypopnea index $\geq 15/h$), with the aid of a validated test battery (Sniffin' Sticks) before initiation of nCPAP therapy and after three months of treatment. Additionally, adherent subjects were included in a double-blind randomized three weeks CPAP-withdrawal trial (sub-therapeutic CPAP pressure).

Results

Twenty five of the 35 patients used the nCPAP therapy for more than four hours per night, and for more than 70% of nights (adherent group). The olfactory performance of these patients improved significantly ($p = 0.007$) after three months of nCPAP therapy. When considering the entire group of patients, olfaction also improved significantly ($p = 0.001$). In the randomized phase the sense of smell of six patients deteriorated under sub-therapeutic CPAP pressure ($p = 0.046$) whereas five patients in the maintenance CPAP group showed no significant difference ($p = 0.501$).

Conclusions

Olfactory performance improved significantly after three months of nCPAP therapy in patients suffering from moderate and severe OSA. It seems that this effect of nCPAP is reversible under sub-therapeutic CPAP pressure.

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Citation: Boerner B, Tini GM, Fachinger P, Graber SM, Irani S (2017) Significant improvement of olfactory performance in sleep apnea patients after three months of nasal CPAP therapy – Observational study and randomized trial. PLoS ONE 12(2): e0171087. doi:10.1371/journal.pone.0171087

Editor: Raffaele Ferri, Associazione OASI Maria SS, ITALY

Received: April 14, 2016

Accepted: December 12, 2016

Published: February 3, 2017

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Data Availability Statement: Our data cannot be made available in the manuscript due to an obligation of the Ethics Committee of the Nordwest- und Zentralschweiz, EKZ, Switzerland that data are just accessible for defined research partners. Readers may contact the corresponding author to request the data. The Ethics Committee may also be contacted at the following address: Ethikkommission Nordwest- und Zentralschweiz, Hölbelstrasse 53, CH-5056 Basel.

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