

European Respiratory Society Annual Congress 2012

Abstract Number: 2889

Publication Number: P905

Abstract Group: 4.2. Sleep and Control of Breathing

Keyword 1: Sleep studies **Keyword 2:** Treatments **Keyword 3:** Apnoea / Hypopnea

Title: A new therapeutic intervention for position-related OSA using an adaptive bedding system

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Body: Obstructive sleep apnoea (OSA) is associated in 80% of the cases with more and longer apnoeas/hypopneas in the supine position. Some effort has been made to find an effective treatment that improves OSA by correcting the sleep position. So far, the most used treatment is avoidance of sleeping supine, although there is a lack of compliance due to discomfort and sleep disruption. Researchers recently investigated the effect of the head/neck position on OSA. One study found an improvement of the apnoea/hypopnea index (AHI) and sleep quality after promoting neck extension with a custom fitted cervical pillow (Kushida, C.A. et al. Sleep and Breathing 2001; 5(2): 71-78). The objective of this study was to assess the effect of cervical positioning on OSA through the use of an adaptive bedding system which promotes neck extension in the supine position. Seven male OSA patients were studied. The group included 2 mild, 3 moderate and 2 severe patients. They spent 3 nights in a sleep center: an adaptation, a reference (REF) and a steering night (AS), during which the shoulder-neck region of the bed was automatically adapted to promote neck extension when detecting a supine position of the subject. Sleep and breathing parameters were obtained by means of questionnaires and PSG. Overall, subjects showed no significant improvement in AHI between the reference (24.1 ± 14.3) and steering night (25.4 ± 15.5 ; $p=.866$). However, detailed evaluation identified an improvement in the apnoea index during supine positions in the steering night (REF: 5.3 ± 4.5 ; AS: 1.3 ± 1.8 ; $p<.05$). These preliminary findings indicate that the bedding system might improve supine-related AHI, but further experiments are needed.