



Preliminary data on the effectiveness and compliance of a sleep positioning pillow (Posiform®) in the treatment of positional sleep-related breathing disorders

Johan Newell^a, Olivier Mairesse^{a,b}, Anthony de Bock^c, Paul Verbanck^{a,d}, Daniel Neu^{a,d}

Introduction

Continuous positive airway pressure (CPAP) remains a first choice treatment for both moderate and severe obstructive sleep apnea (OSA). Till present, there is however no clear consensus on optimal treatment interventions for milder sleep-related breathing disorders (SRBD) in general or for positional SRBD (pSRBD) in particular (1). While several therapeutic options are either relatively invasive and/or expensive (ex. oral appliance therapy, surgical treatment, electrical stimulation), positional therapy (PT) may still present as a valuable and affordable first-line intervention for pSRBD (2,3).

Methods

19 patients, free from any sleep interfering drug treatment or substance abuse, without any major physical or mental comorbid condition, presenting with pSRBD, underwent three nights of full polysomnographic (PSG) recording in an academic sleep lab. Inclusion criteria were based on the first night's PSG. During the second consecutive night, a sleep positioning pillow (Posiform® - Picture A) was administered. A third PSG was performed after one month of usage of the pillow at home.

Results

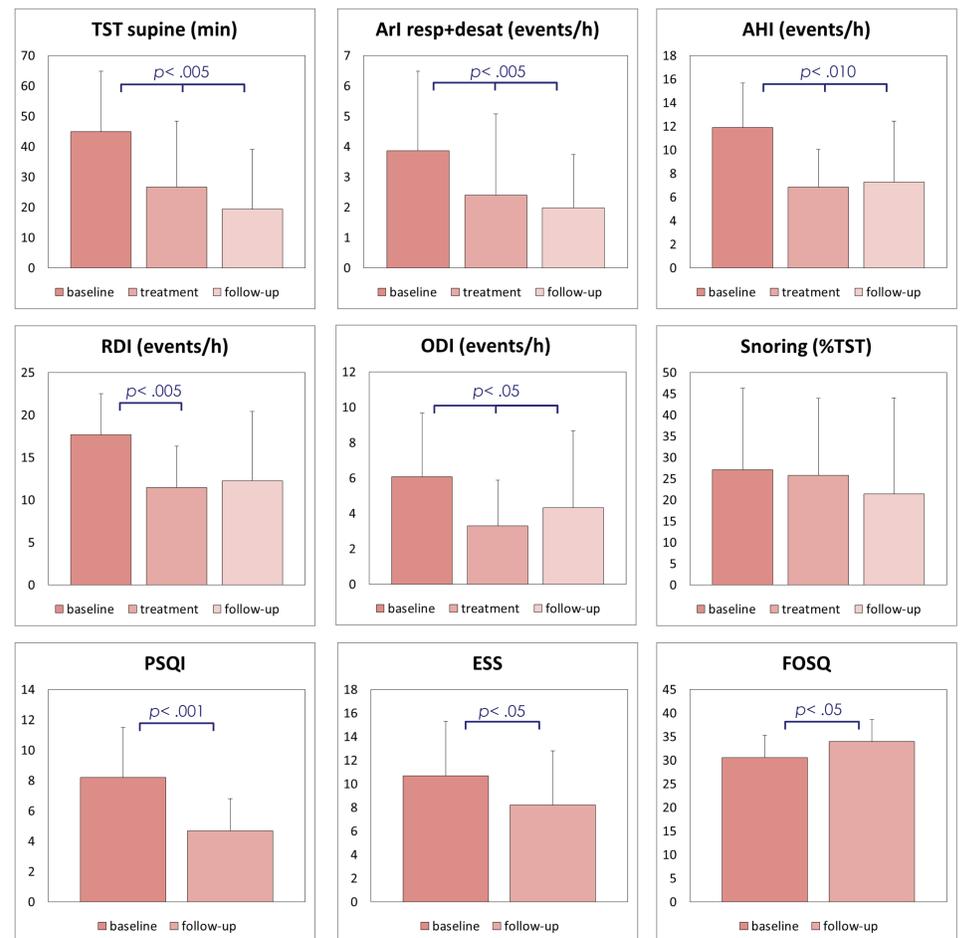
Significant immediate treatment effects after one night and significantly sustained effects after one month were observed in our sample. Significant reductions of sleep time in supine position, respiratory-related sleep fragmentation, apnea/hypopnea index, respiratory distress index and oxygen desaturation index were observed (Figure 1). In addition, we obtained remitted sleep quality impairment as measured by the Pittsburgh Sleep Quality Index. Daytime sleepiness (Epworth Sleepiness Scale) and the Function Outcomes of Sleep Questionnaire also showed significant improvements after PT (Figure 1 and Table 1). No particular treatment effects were observed on sleep architecture.

Conclusions

The combined and significant improvement on both sleep-related respiratory variables and symptom scales were observed after treatment initiation as well as one month follow-up of usage of a sleep positioning pillow (Posiform®). Furthermore, reported compliance and overall satisfaction appeared to be highly concordant at follow-up.



Figure 1: Evolution of sleep-related respiratory variables and symptom scales



Legend: apnea/hypopnea index (AHI), arousal index (Ari), Epworth Sleepiness Scale (ESS), Functional Outcomes of Sleep Questionnaire (FOSQ), oxygen desaturation index (ODI), Pittsburgh Sleep Quality Index (PSQI), respiratory distress index (RDI), respiratory-related events with associated desaturations (resp+desat), total sleep time (TST)

Picture A: Sleep positioning pillow (Posiform®)



Table 1: Overview of patient characteristics, reported compliance and overall satisfaction

Characteristics	Age (years) 52,4 ± 10,0
	Gender 53% male
	BMI (kg/m²) 30,2 ± 5,0
	Neck circumference (cm) 40,2 ± 3,1
	APOC I 14 patients ; APOC II 5 patients
Compliance	Days of use per month 28,7 ± 3,2
	Hours of use per night 7,4 ± 1,0
Satisfaction	Auto-evaluation 7,8/10 ± 1,5
	Hetero-evaluation 7,7/10 ± 1,1

Legend: Body mass index (BMI), Amsterdam Positional Obstructive Sleep Apnea Classification (APOC), > 10% of total sleep time in both best and worst sleep position as well as apnea/hypopnea index < 5 in best sleep position (APOC I), > 10% of total sleep time in both best and worst sleep position as well as apnea/hypopnea index of best sleep position in a lower obstructive sleep apnea category than overall apnea/hypopnea index (APOC II)

AFFILIATIONS

^aBrugmann University Hospital, Sleep Laboratory and Unit for Chronobiology (U78), Université Libre de Bruxelles (U.L.B.)/Vrije Universiteit Brussel (V.U.B.),

Brussels, Belgium

^bRoyal Military Academy, Department LIFE, Brussels, Belgium

^cHôpital du Valais, Department of Internal Medicine, Sierre, Switzerland

^dUNI Neuroscience Institute, Faculty of Medicine and Motor Sciences, Université Libre de Bruxelles (U.L.B.), Brussels, Belgium

References:

(1) McNicholas WT, Bonsignore MR, Lévy P, Ryan S. Mild obstructive sleep apnoea: clinical management and approaches to management. *Lancet Respir Med* 2016;S2213-2600(16)30146-1.

(2) Weaver TE, Calik MW, Farabi SS, Fink AM, Galang-Boquiren MT, Kapella MC, Prasad B, Carley DW. Innovative treatments for adults with obstructive sleep apnea. *Nature Science Sleep* 2014;6:137-147.

(3) Ravesloot MJL, van Maanen JP, Dun L, de Vries N. The undervalued potential of positional therapy in position-dependant snoring and obstructive sleep apnea – a review of the literature. *Sleep Breath* 2013;17:39-49.

Poster presented at the 23th congress of European Sleep Research Society (ESRS) in Bologna (13-16 September 2016)

Financial support & potential conflict of interest: material support provided by Oscimed SA