CORRESPONDENCE

Effect of CPAP on the metabolic syndrome: a randomised sham-controlled study

A recently published editorial concluded that severity of disease, Continuous Positive Airway Pressure (CPAP) compliance and comorbidities might explain discrepancies between a randomised sham-controlled crossover study which showed that CPAP reversed metabolic syndrome (metS) and reduced weight, body mass index (BMI) and visceral abdominal fat and our findings from a randomised sham-controlled parallel-group study. Whether CPAP might be a novel method to reverse metS in those with Obstructive Sleep Apnea (OSA) is an intriguing possibility, since diagnosing and treating metS is important. We examined the effect of CPAP on metS in our population, a typical OSA cohort with treated long-standing metabolic comorbidities and less than ideal CPAP usage. To rectify this, we retrospectively assayed stored blood for lipids and abstracted information regarding hypertension, hyperlipidaemia and its treatment to diagnose metS. The study design and baseline characteristics have been previously reported. MetS was defined according to international consensus guidelines, and the presence (or absence) of metS was assessed at 0 and 12 weeks. The change in the proportion of participants with or without metS from baseline were analysed by generalised linear models examining the treatment by time interaction (SAS V9.2). Analyses utilised generalised estimating equations and an exchangeable correlation structure, which were then confirmed by Bayesian methods.

Reversal of metS after 12 weeks occurred in 3 of 18 (17%) men with metS at baseline treated with CPAP compared with 1 of 14 (7%) men treated with sham; whereas metS developed in 2 of 14 (14%) men without metS at baseline compared with 3 of 17 (18%) men treated with sham (time by treatment interaction p=0.28): table 1. This indicates that 12 weeks of CPAP therapy had no effect on the development or regression of metS. Utilising Bayesian methods, restricting the analysis to the 49 men with complete data, or using the original National Cholesterol Education Program Adult Treatment Panel III criteria for diagnosing metS did not alter this finding.

CPAP therapy remains the standard care for OSA, however its effect on metS has only been previously examined in two contradictory randomised cross-over studies, and now by us. On the other hand, all randomised sham-controlled studies show no effect of CPAP on visceral abdominal fat, BMI and weight, except one: table 2. Our original report and these additional data support the conclusion that CPAP is unlikely to have a major effect on metabolic health in unselected individuals with OSA.

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Contributors Study concept and design: PYL; Acquisition of data: CMH, DRS; Analysis and interpretation of data: CMH, PYL; Drafting of the manuscript: CMH, PYL; Critical revision of the manuscript: CMH, DRS, PYL; Statistical analysis: CMH, PYL; Obtained funding: PYL.

Funding The study was supported by the National Health and Medical Research Council of Australia (NHMRC) through a project grant (512498), a Centre for Clinical Research Excellence in Interdisciplinary Sleep Health (514212) and fellowships to CMH and PYL (512057 and 1025248, respectively). Sham machines were provided by Phillips Respironics.

Competing interests None.

Ethics approval The study was approved by the Sydney South West Area Health Service Human Research and Ethics Committee (RPAH Zone).

Provenance and review Not commissioned; externally peer reviewed.


To cite Hoyos CMS, Sullivan DR, Liu PY. Thorax 2013;68:1–8. doi:10.1136/thoraxjnl-2012-203074

Received 2 December 2012
Revised 19 December 2012
Accepted 21 December 2012

Acknowledgements We thank the men who participated in the study. We would also like to thank

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Data are calculated standardised effect sizes (95% CI) after treatment, unless otherwise stated.

*Values are adjusted for baseline.

M, Male; F, Female; AHI, Apnoea Hypopnea Index; BMI, body mass index.

Table 1 The development and regression of metS from baseline to week 12

Table 2 Randomised sham-controlled studies examining the effect of CPAP on visceral abdominal fat (VAF)
the research team, sleep physicians and technicians at the Woolcock Institute of Medical Research. We also thank the Sleep Disorders Unit and Biochemistry department of the Royal Prince Alfred Hospital.

REFERENCES


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Thorax published online January 15, 2013

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