Mild to moderate obstructive sleep apnoea and symptoms thereof are improved by significant weight loss, a prospective, randomised controlled trial in progress

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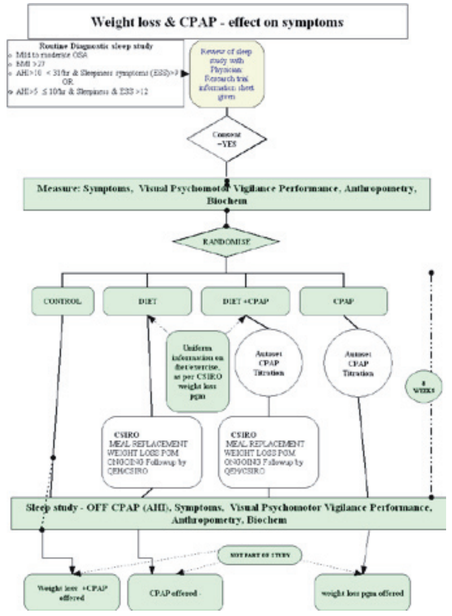
Introduction

Weight loss is predicted to reduce the AHI of patients with OSAHS. For instance the Wisconsin sleep cohort study found a 1% change in weight was associated with a 3% change in AHI . Therefore a modest weight decrease in patients with moderate OSA can have a substantial effect on severity. This may also have a beneficial effect on the symptoms of OSA.

Methods

A randomised trial comparing the effect of weight loss on severity and symptoms of OSA compared to the change in symptoms using CPAP. Overweight patients having undergone a diagnostic PSG study that demonstrated mild to moderate OSA, with significant sleepiness without co morbidity affecting ability to diet were recruited. Subjects were randomised to treatment arms; Control, CPAP, Diet or diet and CPAP, for 8 weeks. At the end of the intervention PSG, questionnaires, blood screen and weight and girth measurement s were repeated. An autotitration device (Resmed Autoset S8) was used to provide CPAP, weight loss was addressed by dieticians using partial meal replacements (Kicstart).



Results

Number of patients completing the trial: 34

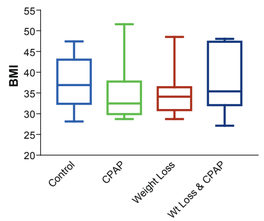
Demographics by group

	Total	Male	Female
Control	10	4	6
CPAP	9	4	5
Weight Loss	8	6	2
Weight loss & CPAP	7	3	4
Mean Age		54	55

BMI of subjects in each of the trial arms

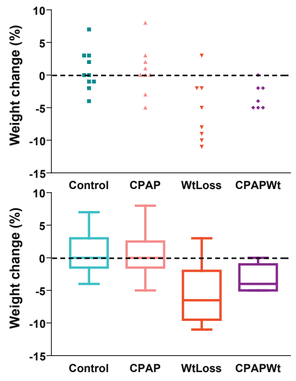
Subjects were well matched by BMI

Trial Arm



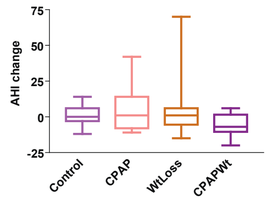
Weight change by group

Weight change in each of the trial arms – Significant weight loss was achieved by subjects in the diet group (6%) and the diet with CPAP group (3%).



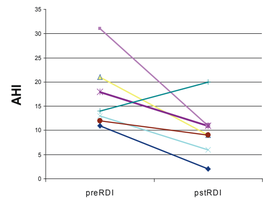
AHI change by group

AHI change in each of the trial arms.



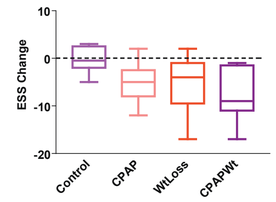
AHI change in the CPAP with diet group (CPAPwt)

Only in the CPAP with diet group was the change in AHI significant. Mean AHI fell from 17 to 10 events/hour (P=0.024).



ESS change by group

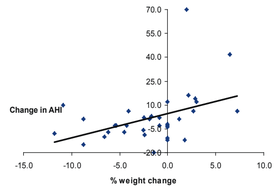
ESS decreased substantially in all treatment groups compared to controls. Mean group changes were in the CPAP -5, P=0.005, Diet group -4,P=0.048 and Diet and CPAP -9, P=0.004.



All subjects: change In AHI with weight

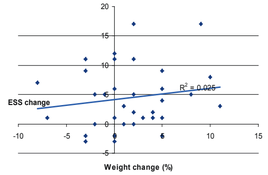
Combining the results of all groups, change in AHI with weight correlated poorly (r2 = 0.12) however when only those with a substantial weight change (> + 5%) were considered the relationship was strong (r2 = 0.43).

Change in AHI with weight, all subjects

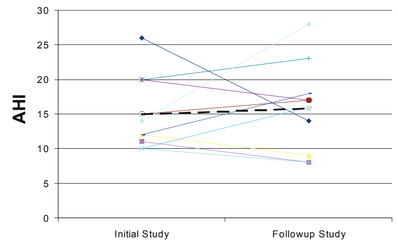


Change in ESS with change in weight

Change in ESS did not correlate with change in weight



Variability in AHI of subjects in the control arm



All active treatment groups showed improvement in the ESS. It is expected that sleepiness symptoms improve with CPAP treatment and anticipated that weight loss has similar benefit because of the effect of weight loss on AHI. However weight change and ESS were uncorrelated, in part because of the many factors influencing AHI on a given night. The ESS may be a robust tool for assessing interventions.

The greater effect on symptoms seen in the combined treatment group is unlikely to be an additive effect of weight loss and CPAP, rather preference for weight loss or CPAP led to greater compliance benefit with one aspect of the treatments offered.

Discussion

These preliminary results are from 34 subjects of a trial that ultimately will include 80 subjects therefore the conclusions that can be drawn are limited.

The premise, that subjects allocated to the 2 arms of the trial that included diet, would lose weight, was satisfied. However for individuals the result was variable and the overall result fell short of the average 10 % loss in weight believed possible.

The other key result anticipated was the change in AHI with weight. This result was seen when taken over all patients, although the correlation was weak. The changes in baseline to followup in AHI in the control group highlight the fragility of this measurement.

Conclusion

Symptoms attributable to mild to moderate OSA were reduced by prescription of weight loss in some patients. The mechanism for this effect is as yet unexplained

References

Epidemiology of Obstructive Sleep Apnea A Population Health Perspective

Terry Young, Paul E. Peppard, and Daniel J. Gottlieb

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AHI	Sum of Apnoeas and Hypopneas per hour.
BMI	Body Mass index
ESS	Epworth sleepiness scale
CPAP	Continuous positive airway pressure
WtLoss	Group randomized to weight loss
CPAPWt	Group randomised for CPAP and weight loss

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