

Concurrent Session 9

Salt and blood pressure: relationship with obesity, weight loss and direct effects on vascular function

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Background - The mechanisms underlying the link between obesity and hypertension are uncertain and there are few data on the effect of weight loss on the blood pressure response to salt loading.

Objective - To determine the effect of weight loss on the blood pressure response to salt loading

Design - 35 overweight and obese volunteers followed a 4 week protocol. They were randomised to take 12g of salt (250 mmol/d) for either the first or last 2 weeks and followed a low salt diet (<30 mmol/day) during the other two weeks. Salt and potassium intake was checked by a 24 h urine collection at the end of each 2 week period while blood pressure was measured with ambulatory monitors. Pulse wave velocity and augmentation index were also measured and flow mediated dilatation (FMD) was measured just prior to and immediately after weight loss. The salt loading protocol was repeated after a 12 week weight loss intervention which aimed to reduce weight by 6-12 kg.

Outcomes - Salt loading of 200mmol/d elevated day time blood pressure by 6/3 mm Hg which was not altered by a 7.7 kg weight loss. Resting fasting blood pressure during the low salt phase fell with weight loss by 6/3 mm Hg. Salt loading decreased FMD from 6.7 to 4.1% ($P < 0.01$) while augmentation index increased from 23 to 26%. Pulse wave velocity was unchanged. Following weight loss the blood pressure to salt was unchanged and none of the vascular measures improved.

Conclusions - Salt has direct vascular effects and its effects on blood pressure are not diminished by weight loss.

Predicting weight loss in overweight and obese people using a very low energy diet

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Background - Treatment of overweight and obesity with very low energy diets (VLEDs) is one of the most extensively used weight-loss method in the scientific literature.¹ Our clinical experience has been that there is a wide variation in tolerance, acceptability and weight loss success associated with the use of VLEDs.

Objectives - To explore predictors of weight loss in volunteers participating in a weight loss program using a VLED.

Design - 180 healthy overweight or obese men and women, age 43.0 years (SD=10.5); weight 112.5 kg (SD=24.2); BMI 39.1 kg/m² (SD=7.6) participated in a longitudinal study of 12-weeks using the commercially available VLED known as Optifast®.

Outcomes - 159 participants (88.3%) completed 12 weeks of the VLED. Weight loss ranged from 3.1% to 25.8% of baseline weight. Regression analysis revealed three baseline predictors were significant for the prediction of weight loss after 12 weeks. The significant predictors were weight ($P = 0.014$), waist ($P = 0.025$) and fat mass ($P = 0.005$) and the model explained 49.2% of the variation in the response. Including weight loss at week 4 along with the baseline predictors resulted in a vastly better fitting model that explained 80.4% of the variation in weight loss at week 12. On its own, weight loss at week 4 explains 74.4% of the variation in the response. Residual analysis for all estimated models indicated that there were no major violations of the usual model assumptions. An individual's age, sex and BMI at baseline did not predict their weight loss after 12 weeks of VLED treatment.

Conclusion - Parameters that predict successful outcomes from VLED treatment may assist in determining the degree of success of VLED treatment for overweight and obese individuals.

References

1. Saris WH. Very-low-calorie diets and sustained weight loss. *Obes Res* 2001; 9 Suppl 4: 295S-301S.