Clinical Medicine 2019 Vol 19, No 2: s118

Therapeutic action of ketogenic enteral nutrition in obese and overweight patients: an interventional study

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Aims

Ketogenic enteral nutrition (KEN) is a modification of Blackburn's protein-sparing modified fast, using a hypocaloric, ketogenic liquid diet. The study is about KEN in overweight and obese patients receiving short treatment of the nutritional solution as 24-hour infusion. It is a retrospective analysis that examines safety, weight loss and body composition changes after three sequential 10-day cycles of KEN therapy.

Methods

Anthropometric and bio-impedance data from 629 patients who underwent KEN were collected before and after completing a 10-day cycle. The study focuses on the change in outcomes from the first cycle to the second cycle and from the first cycle to the third cycle. The following outcomes were explored: weight, waist circumference, body mass index (BMI), fat mass, lean mass, dry lean mass, phase angle, wellness marker and water mass as a percentage of total body weight. The cycle 1, 2 and 3 outcomes were analysed using descriptive statistics (mean, standard deviation, n) summarising the outcome at each cycle. Statistical tests were used to test for significant differences between paired cycle 1 and cycle 2 outcomes and also between paired cycle 1 and cycle 3 outcomes. For normally distributed outcomes, the paired t-test was used. Whereas for skewed outcomes, the Wilcoxon signed-ranks test was used. Scatter plots were used to plot percentage of excess weight loss against phase angle. The Pearson's correlation coefficient was calculated. Regression analysis for the outcome percent change in weight from cycle 1 to cycle 2 for phase angle and basal metabolic rate (BMR)/ weight ratio as predictors was carried out.

Results

The results suggested significant changes for all analysed parameters. There were significant decreases in weight, waist circumference, BMI, fat mass, lean mass, dry lean mass and phase angle. Quantitative changes in lean mass and dry lean mass were negligible with respect to changes in fat mass. There was also a statistically significant increase in water mass as a % of total body weight and wellness marker from cycle 1 to cycle 3. The Pearson's correlation coefficients r=0.18, p=0.004 and r=22, p=0.04 indicated changes in cycle 1 and cycle 3 in percentage of weight excess to be significantly, positively correlated to phase angle. The multivariate linear regression model showed that for a 1 unit increase in BMR/weight there was a 3.3 percent decrease in percent change in weight. KEN treatment was overall well tolerated. 92% of patients on oral hypoglycaemics and 80% of patients on anti-hypertensive medication were able to discontinue their medication safely during KEN therapy.

Conclusion

KEN treatment is safe, well tolerated and results in rapid fat loss without detriment to dry lean mass. ■

Conflict of interest statement

Disclosure of interest: C Papadia: none declared, P Basset: none declared, G Cappello: none declared, R Shidrawi: Director of Weight Management Systems Ltd.

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