Diet-Induced Weight Loss in Obese Children With Asthma: A Randomized Controlled Trial

PURPOSE OF THE STUDY. The goal of this study was to assess if dietary intervention (DI) can achieve weight loss in obese asthmatic children and if diet-induced weight loss leads to changes in asthma outcomes.

STUDY POPULATION. The study evaluated 32 obese (BMI z score ≥1.64 SD score) Australian children aged 8 to 17 years, with a physician diagnosis of asthma. Exclusion criteria included unexplained weight change during the past 3 months, inflammatory or endocrine disorders, and respiratory disorders other than asthma.

METHODS. In this 10-week, randomized controlled trial, 32 obese asthmatic children were randomized to a wait-list control (WLC) group (n = 16) or a DI group (n = 16). DI participants had a targeted 500-kcal/d reduction from individually calculated age- and gender-appropriate energy requirements and either attended dietitian counseling sessions or were contacted by telephone weekly. Asthma status, quality of life, tobacco exposure, dynamic and static lung function, and plethysmography were assessed at baseline and postintervention.

RESULTS. BMI z score was significantly reduced in the DI group versus the WLC group. Expiratory reserve volume (ERV) increased significantly within the DI group compared with baseline; however, the ERV difference between the 2 groups was not statistically significant. The Asthma Control Questionnaire score improved significantly within the DI group compared with the WLC group. There was no change in the number or proportion of eosinophils or neutrophils within or between groups. There was a nonsignificant trend toward reduction in percentage of neutrophils in the DI group. C-reactive protein (CRP) increased significantly in the WLC group compared with the DI group. No change was observed in IL-6, leptin, or adiponectin levels within or between groups. Change in BMI z score correlated with change in CRP and change in exhaled nitric oxide. Change in the Asthma Control Questionnaire was associated with change in CRP.

CONCLUSIONS. DI can induce acute weight loss in obese asthmatic children, with improvements in static lung function, asthma control, and self-reported quality of life. DI was effective in reducing BMI z score by a statistically significant 0.2 BMI SD score, which is comparable to previous studies. Systemic and airway inflammation did not change after weight loss.

Reviewer Comments. This is a novel pilot study. Previous studies of weight-loss interventions in asthmatic patients have primarily been in adults, and the majority have investigated surgically induced weight loss. Limitations to the present study include small sample size, uneven randomization, and self-report of several measures. Despite these acknowledged limitations, the findings suggest that DI can improve multiple asthma outcomes. Given the high prevalence of obesity in the asthmatic pediatric population, additional and larger trials are warranted. Areas for future study include additional outcome measures such as use of rescue medications, asthma-related hospitalizations, and potential adverse effects.


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Normocaloric Diet Improves Asthma-Related Quality of Life in Obese Pubertal Adolescents

PURPOSE OF THE STUDY. The goal of this study was to determine if a supervised normocaloric diet would help improve asthma-related quality of life (AR-QoL) in obese prepubertal adolescents with asthma.

STUDY POPULATION. Fifty-one children between 12 and 16 years of age diagnosed with stable allergy-induced asthma and obesity (BMI >95th percentile of the Centers for Disease Control and Prevention BMI-for-age growth charts) were recruited from an allergy clinic in Guadalajara, Mexico.

METHODS. Children were randomized to undergo a 28-week dietary program consisting of a monitored normocaloric diet (n = 26) and matched to a control group who had no dietary restrictions (n = 25). AR-QoL questionnaires and pulmonary function test results were recorded before and after the intervention period.

RESULTS. Energy and macronutrient intake were significantly different in the test group compared with control subjects (2231 ± 231 vs 3243 ± 278 kcal/d; P = .001) with increased consumption of carbohydrates, fat, and saturated fat among the control subjects’ diet. Although the mean BMI z score significantly declined in the test group, the mean BMI z score remained unchanged in the control group. There was significant improvement in AR-QoL scores in the dietary intervention group compared with control subjects (P < .001). They also reported fewer episodes of asthma rescue inhaler use (17 vs 39; P < .02), as well as fewer nighttime awakenings (11 vs 2; P < .001). There seemed to be more improvement in forced expiratory volume in 1 second values among the study group, but the results were not statistically significant.

CONCLUSIONS. The normocaloric dietary intervention was associated with improved AR-QoL and some asthma control. Dietary programs may serve as a complementary...
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