Does dietary fat composition predict short-term elevations in lipid levels in adults on a modified Atkins diet?

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OBJECTIVES/GOALS: The modified Atkins diet (MAD) is used in the management of drug-resistant epilepsy in adults. Some patients on MAD show an increase in serum levels of total cholesterol and low-density lipoprotein (LDL) cholesterol. We explored whether dietary fat composition predicts short-term elevations in serum lipid levels in diet-naïve adults who begin MAD. METHODS/STUDY POPULATION: Participants self-reported their diet intake with 3-day food records at baseline, 1 month and 2 months. Food records were analyzed using Nutrition Data System for Research software. Fasting serum levels of total cholesterol (TC), high-density lipoprotein (HDL) cholesterol, and triglycerides were also collected and LDL level calculated at baseline, 1 month, and 2 months. RESULTS/ANTICIPATED RESULTS: 38 patients submitted complete food records at each study visit (baseline, 1 month, and 2 month). Compared to baseline diet intake, there was a significant reduction in daily carbohydrate intake at 1 and 2 months months ($p<0.001$). There was also a significant increase in daily saturated fatty acid (SFA) intake at 1 and 2 months ($p<0.001$), daily mono-unsaturated fatty acid (MUFA) intake at 1 and 2 months ($p<0.001$), and daily cholesterol intake at 1 month ($p<0.05$) and 2 months ($p<0.001$), but no change in daily poly-unsaturated fatty acid (PUFA) intake over time. Compared to baseline, there was a significant increase in serum LDL at 1 month ($p<0.001$) and 2 months ($p<0.01$) and an increase in serum TC at 1 month ($p<0.01$) but not 2 months. DISCUSSION/SIGNIFICANCE OF IMPACT : Despite a significant increase in total fat, saturated fat and mono-unsaturated fat intake as well as an increase in total cholesterol and LDL levels following MAD initiation, dietary fat composition appears to minimally predict serum lipid values in the short term. CONFLICT OF INTEREST DESCRIPTION: Tanya McDonald has received speaking honoraria from Nutricia North America. Bobbie Henry-Barron receives grants from Johns Hopkins Institute for Clinical and Translational Research (ICTR) which is funded in part by Grant Number UL1 TR 001079 from the National Center for Advancing Translational Sciences (NCATS) a component of the National Institutes of Health (NIH), and NIH Roadmap for Medical Research, Nutricia and Vitaflo. Diane Vizthum receives grants from the Johns Hopkins Institute for Clinical and Translational Research (ICTR) which is funded in part by Grant Number UL1 TR 001079 from the National Center for Advancing Translational Sciences (NCATS) a component of the National Institutes of Health (NIH), and NIH Roadmap for Medical Research. Mackenzie C. Cervenka has received grant support from Nutricia North America, Vitaflo, Army Research Laboratory, The William and Ella Owens Medical Research Foundation and BrightFocus Foundation. She receives speaking honoraria from LivaNova, Epigenix, Nutricia North America and the Glut1 Deficiency Foundation and performs consulting with Nutricia North America and Sage Therapeutics and receives Royalties from Demos Health.

Early Childhood and Prepubertal Overweight and Obesity are Associated with Earlier Pubertal Onset in Boys and Girls: A Prospective Birth Cohort Study[†]

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OBJECTIVES/GOALS: It is hypothesized that the global secular trend toward earlier puberty onset, with implications for many future health outcomes, is related to the obesity epidemic. This study aims to examine prospective associations between weight during specific developmental windows and timing of puberty onset. METHODS/STUDY POPULATION: This study includes 1,296 mother-infant dyads from the Boston Birth Cohort, a predominantly minority (>80% black/Hispanic), low-income, and urban prospective birth cohort recruited and followed between 1998 and 2019. Age at peak height velocity (APHV), a well-defined and standardized proxy for puberty onset, is derived by fitting height measurements recorded during clinical visits using a mixed effects growth curve model. Multiple linear regression is performed to examine the relationships between early childhood (ages 2-5y) and prepubertal (ages 6-9y) overweight and obesity, weight trajectories between these two periods, and APHV, while controlling for known contributors to early puberty. RESULTS/ANTICIPATED RESULTS: Compared to counterparts with normal BMIs, kids who were obese during ages 2-5y (boys: −0.21y, CI[−0.39, −0.04]; girls: −0.22y, CI[−0.39, −0.05]) or ages 6-9y (boys: −0.27y, CI[−0.43, −0.11]; girls: −0.37y, CI[−0.52, −0.23]) had an earlier APHV. Being overweight during ages 6-9y was also associated an earlier APHV (boys: −0.26y, CI[−0.46, −0.07]; girls: −0.26y, CI[−0.42, −0.10]). Looking at weight trajectories, kids who were persistently overweight or obese from ages 2-5y to ages 6-9y had an earlier APHV (boys: −0.28y, CI[−0.45, −0.12]; girls: −0.31y, CI[−0.46, −0.16]), as did girls with normal BMIs during ages 2-5y and who were overweight or obese during ages 6-9y (−0.45y CI[−0.64, −0.26]). DISCUSSION/SIGNIFICANCE OF IMPACT: The temporal and dose-response relationships seen in this historically understudied population suggests that childhood obesity is etiologically important in the development, and even programming, of early puberty. This has implications for prediction, prevention, and mitigation of health disparities.

Early Electrographic Seizure Detection by Neuro ICU Nurses via Bedside Real-Time Quantitative EEG[†]

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OBJECTIVES/GOALS:

1. Determine test characteristics of Neuro ICU nurse interpretation of real-time bedside qEEG for seizure detection
2. Determine difference in time to detection of seizures between qEEG interpretation and raw cEEG reads