Expanded View Figures

Figure EV1. Description of diet compositions, effects of mAD for serum parameters, enzyme histochemistry, and mtDNA amount and mutations.

A Isocaloric mAD composition in PEO patients and control subjects. The amounts of fat, carbohydrates, and proteins are represented as kcal% from the total daily energy expenditure. Values shown as mean and SEM.

B Plasma FGF-21 levels in individual patients and in grouped controls (n = 10) shown as mean ± SD.

C-H Plasma levels of alanine aminotransferase (P-ALT), urea, triglycerides, cholesterol, glucose and insulin in PEO patients and control subjects. Controls (n = 10) are shown as mean ± SD. Dashed line: upper limit of control range.

I COX-SDH histochemical activity analysis on frozen sections from quadriceps femoris muscle of the PEO patients in normal diet (ND) and after modified Atkins diet (mAD). Scale bar, 150 μm.

J Skeletal muscle, relative mtDNA amount compared to nuclear single-copy APP gene.

K mtDNA deletion load as a percentage from total mtDNA in PEO muscle.

Data information: Abbreviations: mo, month; yr, year; fP, fasted plasma; COX, cytochrome c oxidase; SDH, succinate dehydrogenase.
Figure EV1.
Figure EV2. Muscle strength, in vivo lipid contents before and after mAD.

A–C Muscle strength and function of PEO patients on normal diet (ND) as well as 1 and 6 months and 2.5 years after initiation of mAD. P1–4, patients 1–4.

D Magnetic resonance imaging and spectroscopy of liver fat (LFAT), visceral (VAT), and subcutaneous (SAT) adipose tissue, and skeletal muscle of controls and PEO patients on normal diet (ND) and 4 weeks after initiating mAD. EMCL/Cr: extramyocellular lipids (EMCL) or intramyocellular lipids (IMCL) correlated to muscle creatine (Cr). SAT showed decrease of CH2/CH3 ratio, indicating decrease in fatty acid length after the diet in controls. Values shown as mean and SEM. Statistical tests: LFAT, VAT and SAT two-way ANOVA; EMCL, IMCL and SAT CH2/CH3 Student’s t-test (two-tailed). *P < 0.05, ***P < 0.001.
Figure EV3. Plasma metabolomics of PEO patients and controls before and after modified Atkins Diet (PEO_mAD).

A. Plasma creatine to creatinine ratio; plasma metabolomics analysis. Values shown as mean and SEM. Student’s t-test (two-tailed). **P < 0.01.

B. Heatmap of the 25 most significantly changed metabolites in PEO plasma before and after mAD. Values represent relative to mean in the given data set. Color key: Z-score. Hierarchical clustering: vertical axis, metabolites; horizontal axis, patients. Abbreviations: PEO, progressive external ophthalmoplegia; mAD, modified Atkins diet; mo, month after diet initiation.