insufficient numbers of subjects to examine the effect of race on the teprotumumab proptosis response. All analyses were performed on the intent-to-treat (ITT) population using data from the study eye.

Results: A total of 171 patients comprised the population from the two studies. Eighty-four and 87 patients were randomized to the teprotumumab and placebo groups, respectively, and the treatment groups had balanced baseline characteristics. At week 24, significantly more teprotumumab than placebo patients were proptosis responders in all examined subgroups (male: 73.1% vs. 5.0%, female: 79.3% vs. 17.9%, smokers: 70.0% vs. 23.1%, non-smokers 79.7% vs. 11.5%, younger: 76.1% vs. 16.2%, older: 84.6% vs. 7.7%; all $p < 0.001$). In continuous variable analyses, the mean proptosis reduction from baseline was also significantly greater at week 24 in teprotumumab-treated patients than placebo patients (male: -3.34 vs. -0.07 mm, female: -3.10 vs. -0.42 mm, smokers: -2.99 vs. -0.72 mm, non-smokers: -3.20 vs. -0.31 mm, younger: -3.10 vs. -0.39 mm, older: -3.55 vs. -0.22 mm; all $p < 0.001$).

Conclusion: Teprotumumab was effective across subgroups of age, gender, and smoking status in the pooled 24-week clinical trials.

Reference: (1) Smith TJ, et al. *N Engl J Med* 2017;376:1748-1761. (2) Douglas RS, et al. AACE 2019 late-breaking abstract. (3) Kahaly GJ, et al. *Thyroid* 2019;29(Suppl1):A-1 [abstract].

Cardiovascular Endocrinology

FROM BEDSIDE TO BENCH AND BACK AGAIN: LIPID METABOLISM & VASCULAR DISEASE

Changes in Hepatokines and Apolipoproteins Are Associated with Metabolic Response to Metreleptin in Partial Lipodystrophy

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Introduction Metreleptin treatment may improve the metabolic aspects of partial lipodystrophy; however, the treatment response is heterogeneous. This study aimed to explore changes in circulating apolipoprotein concentrations, as well as ANGPLT3, ANGPLT4, and IGF-1 levels in patients treated with Metreleptin as part of a clinical study investigating the efficacy of Metreleptin in non-alcoholic steatohepatitis (NASH) associated with partial lipodystrophy (ClinicalTrials.gov identifier: NCT01679197).

Methods Serum samples of 18 patients with partial lipodystrophy who underwent a full metabolic evaluation and paired liver biopsies before and after Metreleptin were studied. Patients were tested at baseline, month (M) 3, M6, and M12. Glycemic response was defined as "more than 1% HbA1c reduction from baseline". Lipid response was defined as "more than 30% decrease in triglycerides from baseline". The hepatic response was defined as "a decrease of 2 points or more from baseline in NASH score, without an increase in fibrosis". Patients with "any 2 of 3 above" at M12 were defined as metabolic responders. **Results** Metreleptin treatment resulted in significant reductions in triglycerides (346 mg/dL vs. 253 mg/dL; F: 8.474; $p < 0.001$), apo B (145.24 mg/dL vs. 111.09 mg/dL; F: 9.266: $p < 0.001$), apo CII (18.65 mg/dL vs. 15.95 mg/dL; F: 6.663: $p = 0.001$), apo CIII (62.95 mg/dL vs. 49.33 mg/dL; F: 5.640, $p = 0.002$), apo E (8.16 mg/dL vs. 6.52 mg/dL; F: 11.056, $p < 0.001$), and ANGPLT3 (14.36 ng/mL vs. 12.00 mg/dL; F: 4.348; $p = 0.008$) over time. IGF-1 levels significantly increased at M3 (134 ng/mL vs. 139 ng/mL; $p = 0.001$), however the difference was not significant over time. Metabolic responders had lower baseline leptin (12.4 ng/mL vs. 27.8 ng/mL; $p = 0.024$) and IGF-1 (95 ng/ml vs. 151 ng/mL; $p = 0.008$), and higher apo CII (39.06 mg/dL vs. 17.90 mg/dL; $p = 0.011$), apo CIII (173.57 mg/dL vs. 51.51 mg/dL; $p = 0.015$), apo E (18.41 mg/dL vs. 5.89 mg/dL; $p = 0.002$), and ANGPLT3 (17.33 ng/mL vs. 10.06 ng/mL; $p = 0.04$). Metabolic responders had a significant increase in IGF-1 (95 ng/mL vs. 134 ng/mL; $p = 0.019$), which was statistically distinguished from non-responders ($p = 0.004$). Responders also had a greater reduction in apo CII (20.51 mg/dL vs. -1.84 mg/dL; $p = 0.001$), apo CIII (32.59 mg/dL vs. -7.83 mg/dL; $p = 0.007$), apo E (8.17 mg/dL vs. 0.22 mg/dL; $p = 0.001$), and ANGPLT3 (6.08 ng/mL vs. -0.16 ng/mL; $p = 0.005$) early after treatment at M3. **Conclusions** Metreleptin treatment lowers levels of apolipoproteins associated with triglyceride metabolism as well as ANGPLT3 in patients with partial lipodystrophy. Metabolic response to Metreleptin appears to be correlated with early changes in these factors and an increase in IGF-1 levels.

Adrenal

ADRENAL CASE REPORTS II

Intra-Articular Triamcinolone Injections - a "Slipped" Cause of Cushing's Syndrome

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Background:
Triamcinolone injections are used to treat various orthopedic and rheumatologic conditions; their effects on the hypothalamic pituitary adrenal axis have not been well characterized.
Clinical Case:
A 14 yo female was referred to our clinic for evaluation of low TSH (0.16 μIU/mL) and possible hyperthyroidism. There was no goiter and she appeared euthyroid and had normal free T4 (1.01 ng/dl) but she had typical features of Cushing syndrome (CS), including round facies, thinning of hair, fatigue, truncal adiposity, violaceous striae, facial hirsutism and oligomenorrhea. She was previously healthy and participated in many sports. She did not report any history of exogenous glucocorticoid use but the fasting ACTH (4 pg/ml) and cortisol (0.1 μg/dl) levels were suppressed. Subsequent chart review revealed that she received intra-articular Triamcinolone (TA) to treat "slipping rib" syndrome. This included 3 injections of Kenalog 40 mg/mL, the last in July 2019. Her cumulative TA dose was 440 mg, the equivalent of prednisone 550 mg. Triamcinolone acetonide 1.4 mcg/dL (normal 0-0.1, analyzed by LC-MS/MS) was detected in the urine over 3 months after her last injection.