All 11-oxy-androgens correlated with each other (r_s range: 0.6-0.8, $P < .05$) in both groups. There was no difference in the proportionate contribution of 11-oxy-androgens to the total circulating androgenic pool in patients vs. controls. **Conclusion:** Elevated 11-oxy-androgens in patients with severe insulin resistance suggests that both adrenal and ovarian androgens are upregulated by hyperinsulinemia. Lower 11KT/T in patients compared to controls despite higher 11-oxy-androgens than in controls is consistent with predominant ovarian T excess in patients with severe IR. Correlation between insulin and fold elevation of T relative to controls supports hyperinsulinemia as the cause of high T in states of hyperinsulinism. **Acknowledgement:** This research was supported by the Intramural Program of NIH Clinical Center and NIDDK.

Cardiovascular Endocrinology

ENDOCRINE HYPERTENSION AND ALDOSTERONE EXCESS II

RAAS Triple-A Analysis for the Screening of Primary Aldosteronism

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SUN-LB98

Primary aldosteronism (PA) is recognized as the most frequent cause of secondary hypertension, and its screening is expected to become a routine evaluation in most patients with hypertension. The interference of antihypertensive therapies with the aldosterone-to-renin ratio (ARR) during screening process is a major confounder. Renin-Angiotensin-Aldosterone System Triple-A (RAAS Triple-A) testing is a novel mass-spectrometry based assay for quantification of Angiotensin I (Ang I), Angiotenisn II (Ang II) and Aldosterone in a single sample of serum by RAAS equilibrium analysis. Obtained hormone levels are used to calculate markers for plasma-renin-activity (PRA-S, Ang I + Ang II), plasma angiotensin-converting-enzyme activity (ACE-S, Ang II-to-Ang I ratio) and adrenal function (AA2-Ratio, Aldosterone-to-Ang II ratio), with the latter being useful to screen for PA in hypertension. We performed a comparative evaluation of the diagnostic performance of the AA2-Ratio and 5 renin-based diagnostic ratios, differing in methods to determine aldosterone levels and renin activity in a cohort of 110 patients with hypertension (33 patients with confirmed primary aldosteronism and 77 with essential hypertension). All ratios showed comparable areas under the curves ranging between 0.924 and 0.970 without significant differences between each other. The evaluation of the ACE-S revealed persistent drug intake in some patients as cause for suppressed renin-based diagnostic ratios, while the AA2-Ratio remained unaffected. The Youden index optimal cutoff value for the AA2-Ratio was 6.6 ([pmol/L]/[pmol/L]) with a sensitivity of 90% and a specificity of 93%, proving non-inferiority compared with the ARR while pointing to the potential for an interference-free application in patients under ACE inhibitor therapy. This study shows for the first time the accuracy and reliability of RAAS Triple-A analysis for the screening of primary aldosteronism that can be applied in clinical routine.

Adipose Tissue, Appetite, and Obesity

ADIPOSE TISSUE BIOLOGY AND OBESITY

Insulin Sensing by Astrocytes Is Critical for Normal Thermogenesis and Body Temperature Regulation

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SAT-LB107

The important role of astrocytes in the central control of energy balance and glucose homeostasis has only recently been recognized. Changes in thermoregulation can lead to metabolic dysregulation, but the role of astrocytes in this process is not yet clear. Therefore, we generated mice congenitally lacking insulin receptors (IR) in astrocytes ($IRKO^{GFAP}$ mice) to investigate the involvement of astrocyte insulin signaling. $IRKO^{GFAP}$ mice displayed a significant decrease in energy expenditure and a striking decrease in basal and fasting body temperature. When exposed to cold, however, they were able to mount a thermogenic response. Brown adipose tissue in $IRKO^{GFAP}$ mice exhibited increased adipocyte size, more apoptosis, loss of innervation, and decreased βAR3 expression levels. These findings identify a novel role for astrocyte insulin signaling in the development of normal body temperature control and sympathetic activation of BAT. Targeting insulin signaling in astrocytes has the potential to serve as a novel target for increasing energy expenditure.

Neuroendocrinology and Pituitary

HYPOTHALAMIC-PITUITARY DEVELOPMENT AND FUNCTION

The Spectrum of Genomic and Transcriptomic Alterations in ACTH-Producing and ACTH-Silent Corticotroph Adenomas

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SAT-LB57

Corticotroph adenomas (CA) are rare pituitary tumors that impose several challenges in clinical management - CA are difficult to diagnose, often recur, and are associated with high morbidity and mortality. CA are characteristically Tpit-positive and PIT1-negative and comprise ACTH-producing (Cushing's disease (CD)) and ACTH-silent (AS)