

out of 18 patients had an elevated prolactin on the Roche assay and a normal prolactin on the subsequent Siemens assay that also tests for the presence of macroprolactin. The reasons for testing prolactin in the 7 patients were: secondary hypogonadism (4), pituitary microadenoma (1), oligomenorrhea (1) and baseline labs in a transgender female starting estrogen (1). Of the 7 cases we observed with discordant Roche and Siemens prolactin results, one of our 2 female patients and one of our 4 male patients would have shown concordant hyperprolactinemia results on both assays if the Siemens reference range was narrowed to align with published studies. This study demonstrates significant analytical discordance between prolactin immunoassays, leading to variable clinical interpretation regarding the presence of hyperprolactinemia. We suggest using a single prolactin immunoassay for routine measurement of prolactin as well as investigation of macroprolactin measurement to ensure comparable reactivity towards all forms of prolactin. **References:** (1) Vallette-Kasic et al., *J Clin Endocrinol Metab.* 2002 Feb;87(2):581-8. (2) Gibney et al., *J Clin Endocrinol Metab.* 2005 Jul;90(7):3927-32. (3) Luisa et al., *Clinical chemistry* 2008 Sept; 54:10 1673-1681 (4) Shlomo et al., *J Clin Endocrinol Metab.* February 2011, 96(2):273-288

Adrenal

ADRENAL CASE REPORTS I

Clinical Dilemmas of Adrenal Incidentaloma, Is Change in HU Clinically Significant?

Azra Niaz, MD¹, John Jun, MD¹, Sophia Y. Ali, MBBS².

¹UNIVERSITY OF TOLEDO, Toledo, OH, USA, ²University of Toledo College of Medicine & Life Sciences, Toledo, OH, USA.

SAT-200

Introduction

There has been a recent increase in the incidence of adrenal incidentaloma (AI), defined as an adrenal mass that's unintentionally discovered on imaging obtained for an indication other than suspected adrenal pathology, mainly because of increased availability and improved quality of imaging modalities.

Differentiation based on malignant vs benign and secretory vs non secretory becomes the most important question on finding such mass. Another important question is long term follow up of these AI. We present a case that highlights the importance of follow up due to the potential of AI to increase in size and density over 3 year.

Case

A 58 years old male with a history of ESRD secondary to hypertension, controlled hypertension, CAD s/p CABG was seen for a right 1.9 cm AI (found in 11/2016 on noncontrast CT abdomen) with low attenuation of approximately 10 Hounsfield units (HU).

He was asymptomatic, normal vitals, and an unremarkable physical exam. Hormonal work up was negative for hyperaldosteronism and Cushing syndrome.

About 1 year later, repeat CT abdomen reported an unchanged right, 2.0 x 1.7 cm adrenal mass, 22 HU. Hormonal work-up was not completed and patient was lost to follow up.

Two years later, repeat CT abdomen reported increase size of AI to 2.7 cm and increase in attenuation of 24 HU precontract which increased to 55 HU on the immediate postcontrast exam and 55 HU on 13-minute delayed images. Hormonal work up was negative for Cushing syndrome and hyperaldosteronism. Plasma metanephrine was 0.50 with elevated plasma normetanephrine of 3.85.

In light of being a renal transplant patient and due to increase in size, change in HU, and significantly elevated normetanephrine levels patient was referred for right adrenalectomy.

Discussion

Change in adrenal mass size is known to be a significant predictor of malignant potential. An unenhanced attenuation value <10 HU is characteristic of a lipid-rich adenoma, can predict benign adrenal adenoma with 98% specificity, and has a very low likelihood of a pheochromocytoma.

European Society of Endocrinology recommends if the AI is homogenous, < 4 cm, with a density ≤ 10 UH, no imaging follow up is recommended and biochemical testing for ruling out

pheochromocytoma is indicated in adrenal tumors with an unenhanced attenuation value >10HU. However, the AACE/AAES guidelines recommends AI ≥ 1cm and less than 4cm, repeat imaging with noncontrast CT should be performed at 3–6 months and annually for 1-2 years and if the mass grows or becomes hormonally active then adrenalectomy should be performed.

Conclusion

There are no prospective studies of the optimal frequency and duration of follow up for AI. Considering the increasing incidence of AI, further studies on the clinical significance of change in HU, such as risk of developing pheochromocytoma, along with standardized international guidelines would be helpful for clinicians in managing patients with AI.

Neuroendocrinology and Pituitary

RESEARCH ADVANCES IN PITUITARY TUMORS

Inadequate High Mitochondrial ATP-Synthesis Explains “Non-Fatty-Liver” in Patients with Acromegaly

Paul Fellinger, MD¹, Peter Wolf, MD², Lorenz Pflieger, Dipl.-Ing¹, Krssak Martin, PhD¹, Klavins Kristaps, PhD², Wolfsberger Stefan, MD¹, Micko Alexander, MD¹, Carey Patricia,³ Gürtl Bettina,⁴ Greisa Vila, MD², Wolfgang Raber, MD¹, Fürnsinn Clemens, Prof¹, Thomas Scherer, MD², Trattnig Siegfried, Prof¹, Alexandra Kautzky-Willer, Prof², Michael Krebs, Prof², Winhofer Yvonne, PhD¹.

¹Medical University Vienna, Vienna, Austria, ²Medical University of Vienna, Vienna, Austria, ³CeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, Austria., Vienna, Austria, ⁴Medical University VieCeMM Research Center for Molecular Medicine of the Austrian Academy of Sciences, Vienna, Austria.nna, Vienna, Austria.

OR06-05

Background

Patients with active acromegaly exhibit low hepatocellular lipid content (HCL) despite pronounced insulin resistance.

This contrasts the strong association of insulin resistance with non-alcoholic fatty liver disease in the general population. Acromegaly may therefore help to elucidate antisteatotic pathways. Since low HCL in acromegaly might be caused by changes in oxidative substrate metabolism and interorgan crosstalk we investigated mitochondrial activity and plasma metabolomics as well as lipidomics in active acromegaly.

Approach & Results

Patients In this cross-sectional study, 15 patients with active acromegaly (ACRO) and 17 healthy controls (CON) matched for age, BMI, gender and body composition were included. All participants were invited to undergo 31P/1H-7T-MR-spectroscopy of the liver and skeletal muscle, as well as plasma metabolomic profiling and an oral glucose tolerance test.

In comparison to CON, ACRO were insulin resistant, and showed significant lower HCL but their hepatic ATP-synthesis rate adjusted to HCL was significantly increased ($h_kATP:0.19[0.14;0.24]$ vs $0.28[0.22;0.34]$ s⁻¹; $p=0.024$). Furthermore, the HCL-adjusted ratio of unsaturated to saturated intracellular fatty acids was decreased in ACRO (8.4% vs 25.5% of HCL, $p<0.04$). In skeletal muscle, intramyocellular lipids and ATP-synthesis rate were significantly decreased in ACRO. Plasma lipids and lipidomics did not differ between ACRO and CON, but decreased levels of carnitine species were observed in ACRO.

Conclusions

The dissociation of hepatic lipid content and peripheral insulin resistance in acromegaly is associated with high mitochondrial activity as indicated by liver specific upregulation of the ATP-synthesis rate. This is paralleled by a decreased ratio of unsaturated-to-saturated lipids in hepatocytes and by a change in circulating carnitine species, also reflecting an increased mitochondrial activity. Our findings hint at potential direct effects of growth hormone excess on hepatic lipid and energy metabolism.

Pediatric Endocrinology

PEDIATRIC OBESITY, THYROID, AND CANCER

Modulator of Gut Barrier, Zonulin Was Associated with Waist to Height Ratio in Adolescents

Ki Eun Kim, M.D.¹, Ok-Hyang Kim, M.D.¹, Sol Han, M.D.¹,
Youn-Ho Sheen, M.D.,PhD.¹, Soo-Yeon Kim, PhD.²

¹CHA Gangnam Medical Center CHA University, Seoul, Korea, Republic of, ²College of Bioscience, CHA University, Bundang, Korea, Republic of.

MON-109

Modulator Of Gut Barrier, Zonulin Was Associated With Waist To Hip Ratio In Adolescents

Background: Zonulin is the endogenous protein known to control the permeability of intestinal tight junction reversibly. Zonulin is actively engaged in intestinal innate immunity and is over-expressed in autoimmune diseases where tight junction of intestine plays a pivotal role, such as celiac disease, malabsorption disorder, and type 1 diabetes. Waist-Height ratio was well known as one of indices of obesity and also Waist-Hip ratio was known of

abdominal obesity. We investigated that the associations among Waist-Height, Waist-Height ratio, and the level of Zonulin by assessing obesity-related biomarkers, such as liver enzymes, lipid profiles, and insulin resistance, in a population of adolescents.

Methods: The study included 198 adolescents aged 12-18 years; 92 were overweight/obese and 106 were of normal-weight. We assessed anthropometric and laboratory measures, including body mass index (BMI), BMI z-score, Waist-Height, Waist-Hip ratio, blood pressure, liver enzyme levels, lipid profiles, and insulin sensitivity. Serum Zonulin levels were measured using an enzyme-linked immunosorbent assay.

Results: The mean age of the participants was 15.2 ± 2.5 years. Circulating serum Zonulin levels were significantly increased in overweight/obese participants compared with those in normal-weight participants ($P=0.042$). Zonulin levels were significantly and positively associated with BMI, BMI z-score, alanine aminotransferase levels, triglyceride, fasting insulin, and insulin resistance as indicated by the homeostasis model assessment of insulin resistance (HOMA-IR) (all $P<0.05$). In multivariate linear regression analysis, alanine aminotransferase ($P<0.0001$), triglyceride ($P<0.0001$), and HOMA-IR ($P=0.001$) contributed independently to circulating Zonulin levels after controlling for the effect of BMI z-score. Zonulin levels were more strongly associated with Waist-Hip ratio rather than Waist-Height ratio.

Conclusions: Zonulin was associated with indices of obesity. Waist-Hip ratio was more strongly associated with levels of Zonulin. The positive correlation between these parameters suggests putative pathophysiological mechanism linking Zonulin to metabolic dysfunction in adolescents.

Neuroendocrinology and Pituitary

ADVANCES IN NEUROENDOCRINOLOGY

Brain-Selective Estrogen Therapy to Prevent Androgen Deprivation Therapy-Related Hot Flashes

Istvan Merchenthaler, DSC,MD,PHD¹, Malcolm Lane, Technician¹, Christina Stennett, Postdoc¹, Min Zhan, PhD¹, Laszlo Prokai, PhD².

¹Univ of Maryland, Baltimore, MD, USA, ²Univ of North Texas Health Science Center, Foth Worth, TX, USA.

SUN-234

Synthetic estrogens are used in the clinic to alleviate debilitating neurological symptoms associated with androgen deprivation therapy (ADT), an effective treatment improving survival in prostate cancer patients when administered timely in the course of the cancer. However, this therapy to relieve the symptoms, most commonly hot flashes, causes feminizations that significantly diminishes patients' compliance because of physical and psychological discomfort. Because only estrogens can provide adequate therapy of hot flashes based on current clinical practices, there is an unmet medical need for an effective, side effect-free and, consequently, compliance-gaining intervention to alleviate these vasomotor symptoms distressing prostate cancer patients on ADT. The goal with our experiments was