

not meet statistical significance (6.6 vs. 4.8 years,  $p=0.08$ ). Among CGM users, BMI, ppFEV1, and hemoglobin A1C did not change significantly after implementation of CGM. The documented number of glucose checks did increase at the CFRD visit immediately after implementing CGM (1.9 vs. 3.3 checks per day,  $p=0.002$ ).

**Conclusions:** No patient factor was found to predict successful CGM implementation in our cohort. Our small study suggests that longer duration of diabetes may be associated with successful CGM implementation. Longer follow-up is needed to determine whether CGM therapy improves A1C, BMI, or ppFEV1 in patients with insulin-treated CFRD.

## Reproductive Endocrinology

### REPRODUCTIVE ENDOCRINOLOGY: REPRODUCTIVE FUNCTION AND DYSFUNCTION ON DEVELOPMENT

#### *Vitamin D Levels in Women with Polycystic Ovary Syndrome: Influence of Obesity*

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#### MON-037

**Introduction:** Polycystic ovary syndrome (PCOS) is the most frequent cause of hyperandrogenism in women of reproductive age. Among its metabolic complications, vitamin D deficiency has been described in relation with insulin resistance's pathophysiology and other metabolic risk factors. However, it is not clear if this deficiency is inherent to PCOS or it depends on adiposity degree. As well, it is also suggested that vitamin D could regulate leptin levels and high leptin levels should be associated with vitamin D deficiency in obesity. Our aim was to evaluate the relationship between vitamin D, leptin and obesity degree in PCOS patients.

**Subjects and methods:** In 84 PCOS women (19 -37 years) and 49 controls (22-45 years), 25 hidroxi-vitamin D (25 OH-D) was measured by direct chemoluminescence. Body mass index (BMI) was calculated; 20% of PCOS women were overweight and 46% were obese. Waist circumference (WC) was measured as an indicator of abdominal obesity. The lipid accumulation product (LAP) index, a secondary marker of insulin resistance, was calculated (LAP: [waist (cm) - 58] x triglycerides (mmol/l)). In a subgroup of 26 patients, leptin levels were determined by ELISA method. Statistical analysis was performed through SPSS 22.

**Results:** Variables are expressed as mean  $\pm$  SD or median (range) according to distribution. The following parameters were higher in PCOS women than in controls, BMI: 29.3 (18.6-48.2) vs 22.4 (18.1-37.4) kg/m<sup>2</sup>; WC 95  $\pm$  16 vs 82  $\pm$  11 cm and LAP: 47.9 (1.1-198.2) vs 17.5 (6.8-93.4) cm.mmol/L,  $p<0.0001$  in all cases. 25 OH-D was lower in PCOS: 14.5 (10.0-39.0) vs 17.0 (10.0-38.8) ng/ml,  $p=0.024$ .

Leptin levels in PCOS women were 10.1  $\pm$  5.4, 26.4  $\pm$  7.0 and 33.8  $\pm$  16.9 ng/ml in normal weight, overweight and obese patients, respectively. After a logistic binary regression analysis, differences in 25 OH-D between groups were lost when BMI and WC were considered ( $p=0.556$ ; RR=0.978; IC95% [0.909-1.063]). 25 OH-D levels were negatively associated with WC ( $r=-0.286$ ,  $p=0.006$ ), LAP ( $r=-0.333$ ,  $p=0.002$ ) and leptin ( $r=-0.462$ ,  $p=0.017$ ).

**Conclusions:** although 25 OH-D levels were lower in PCOS women than in controls and negatively associated with LAP, an insulin resistant marker, the fact that differences between groups was lost after correction by BMI and WC, in addition to the correlation found between 25 OH-D and leptin levels, indicates that obesity degree and abdominal fat distribution should be responsible of decreased vitamin D levels in PCOS.

## Thyroid

### THYROID NEOPLASIA AND CANCER

#### *VEGFA and VEGFR2 Expression in Different Histological Types of Thyroid Nodules: Could Immunohistochemistry Have a Clinical Utility?*

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#### MON-504

Vascular endothelial growth factors (VEGFs) are a family of proteins involved in several elements that play an important role in the development of blood vessels. Besides acting in angiogenesis, VEGFA has important roles in chemotaxis, for macrophages and granulocytes, and vasodilation. VEGFA binds to VEGFR2, that acts on the MAPK and PI3K pathways, fundamental pathways for thyroid carcinogenesis. In order to assess the expression of VEGFA and VEGFR2, in different thyroid nodules, we used a Tissue MicroArray including 91 benign (74 females, 16 males, 49.84 $\pm$ 12.65 years old) and 125 malignant thyroid nodules (97 females, 28 males, 46.57 $\pm$ 14.87 years old). Clinical and pathology data were obtained from 47 goiters; 43 follicular adenomas (FA) and a total of 104 papillary thyroid carcinomas (PTC), including 35 classic papillary thyroid carcinomas (CPTC), 30 follicular variant of PTC (FVPTC), 25 oxifilic variant of PTC (OVPTC), 14 tall cell

papillary thyroid carcinomas (TCPTC); and 21 follicular thyroid carcinomas (FTC). All patients were managed according to a standard protocol based on current guidelines and followed-up for 116.9±70.8 months. VEGFA protein expression did not differentiate benign from malignant thyroid nodules. However, VEGFA was more frequently expressed in the less differentiated thyroid tissues. In fact, 95.8% of the FTC had positive expression. On the contrary, the intensity of this protein expression was progressively lower according to the process of cellular dedifferentiation (Goiter: 21.4%; FA: 16.3%; PTC: 8.7% and FTC: 0.0%;  $\chi^2 = 0.031$ ). There was no difference in VEGFR2 expression between malignant and benign nodules ( $\chi^2 = 0.108$ ), but this protein showed more intense expression in tissues that also presented Hürthle cells ( $\chi^2 < 0.0001$ ). We were not able to find any correlation, neither of VEGFA nor with VEGFR2 expression, and any other feature of aggressiveness, including invasion, metastasis, lymph node metastasis, and distant metastasis. We conclude that VEGFA and VEGFR2 expression may help identify less differentiated tumors and the analysis of a larger cohort may prove the clinical utility of these markers.

## Thyroid

### BENIGN THYROID DISEASE AND HEALTH DISPARITIES IN THYROID I

#### *Characteristics of Hypothyroid Patients Achieving Long Term Euthyroidism on Levothyroxine Treatment*

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#### SAT-425

Characteristics of Hypothyroid Patients Achieving Long Term Euthyroidism on Levothyroxine Treatment  
Background

Studies have shown that hypothyroid patients treated with Levothyroxine replacement therapy often experience fluctuations in TSH levels, while others remain well controlled over time.

#### Aim

To assess the association between pre-treatment TSH and other biochemical and clinical characteristics and long-term maintenance of normal TSH under Levothyroxine treatment.

#### Methods

This is a retrospective nested case-control study. Study population included patients above age 18 insured by Clalit Health Service (CHS) in the South of Israel between the years 2002-2017, diagnosed with hypothyroidism (ICD 9 code 244.9) and who had at least one TSH measurement before initiating levothyroxine therapy, purchased

this medication for at least 5 consecutive years with one annual TSH measurement while on treatment. Patients with surgical, post iodine ablation or congenital hypothyroidism were excluded. Patients with a TSH level within the normal range for 5 consecutive years were defined as cases while the others served as controls. Demographic, laboratory, pregnancy status and pharmacy purchase were extracted from the computerized medical records of CHS and compared between the groups.

#### Results

Out of 5472 patients included in the study, 644 had a normal TSH for 5 consecutive years (11.8%, cases). Mean age at first levothyroxine purchase was 55.8±13.7 in cases and 54.10±16.2 in controls (p=0.003) and females comprised 84.8% and 81.4% respectively (p=0.035). Mean pretreatment TSH was 5.15±9.6 in cases and 10.02±29 in controls (p<0.001). Thyroid autoantibodies (anti TPO or anti thyroglobulin) were available in 40.8% and 44.8% of cases and controls respectively (P=0.63) and were positive in 36.5% and 56.7% (p<0.01). Subclinical hypothyroidism was diagnosed in 44.4% of cases and 54.6% of controls with prior to treatment. The odds ratio (OR) for having normal TSH for at least 5 consecutive years, using multivariable logistic regression was 0.99 for pretreatment mean TSH (p=0.89), 0.48 for positive thyroid antibodies (p<0.001), 0.72 for pretreatment diagnosis of subclinical hypothyroidism (p=0.032), 0.69 for use of iron supplements and 1.01 for age at first levothyroxine purchase (per year, p=0.02).

#### Conclusions

In our study population of adults with hypothyroidism treated with levothyroxine, only 11.8% were controlled for at least 5 consecutive years. Positive thyroid autoantibodies, pretreatment subclinical hypothyroidism and use of iron supplements lowered probability of long term TSH normalization, while age was associated with the increased rate. Further research should test whether TSH control for 5 consecutive years signals simply “good control”, or perhaps the possibility of transient forms of hypothyroidism for which treatment discontinuation is recommended.

## Diabetes Mellitus and Glucose Metabolism

### METABOLIC INTERACTIONS IN DIABETES

#### *Dynamic and Regional Variation of Pancreatic Innervation in Diabetes*

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#### SUN-654

**Background:** The pancreas is a highly heterogeneous organ, with regional anatomical, developmental and functional differences. The endocrine pancreas is densely innervated, and neural signals play a significant role in glucose regulation by modulating pancreatic hormone release. However, relatively little is known about the anatomical relationships between islets and nerves across the whole pancreas. Since thin filamentous structures, such as nerves, are difficult to quantify and trace over