

Endocrine Abstracts

September 2020 Volume 70
ISSN 1479-6848 (online)

22nd European Congress of
Endocrinology

5-9 September 2020, European Society of Endocrinology

eECE 2020
22nd European Congress of Endocrinology



published by
bioscientifica

Online version available at
www.endocrine-abstracts.org



22nd European Congress of Endocrinology 5-9 September 2020, European Society of Endocrinology

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EP516**Treatment of hypothyroidism does not affect whole-body oxidative stress, as measured by biomarkers of RNA and DNA damage**

Kamilla Ryom Riis¹, Camilla Larsen¹, Kristian H. Winther¹, Emil L. Larsen², Christina Ellervik³, Laszlo Hegedüs¹, Thomas Brix¹, Henrik E. Poulsen² & Steen J. Bonnema¹

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Background

Hyperthyroidism as well as hypothyroidism have been associated with oxidative stress, caused by an imbalance between pro-oxidants and anti-oxidants. Oxidative stress may damage the genomic apparatus and other cellular structures. Urinary excretion of 8-oxo-7,8-dihydroguanosine (8-oxoGuo) and 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodG), respectively, represent global RNA and DNA oxidation, thus reflecting oxidatively generated modification of nucleic acids in the entire organism. While these biomarkers have been associated with increased morbidity and mortality in various diseases, they have only sparsely been explored in patients with thyroid disorders.

Method

Twenty-eight hypothyroid women (overt: $n=6$; subclinical: $n=22$) were included in a prospective cohort study. Mean age was 48.4 ± 10.8 (s.d.) years at diagnosis. Urinary excretion of 8-oxoGuo and 8-oxodG, corrected for creatinine, were measured shortly after initiation of levothyroxine (LT4) supplementation [mean 38 ± 26 days between start of treatment and first study visit], and after a minimum 12 months of stable euthyroidism.

Results

Before treatment, TSH was 9.40 ± 4.97 mIU/l and total T4 was 75.0 ± 18.4 nmol/l. Mean follow-up time was 604 ± 251 days. When euthyroid, the mean LT4 dose was 112 ± 36 µg, and TSH had decreased to 2.48 ± 2.08 mIU/l. As 8-oxoGuo and 8-oxodG were not normally distributed, a logarithmic transformation was applied. Compared to baseline, none of the biomarkers changed significantly after 12 months of euthyroidism. 8-oxoGuo: geometric mean (GM) 1.82 (95% CI: 1.62–2.03) nmol/mmol creatinine at baseline and GM 1.88 nmol/mmol creatinine (95% CI: 1.67–2.11) at euthyroidism, $P=0.51$. 8-oxodG: GM 1.37 nmol/mmol creatinine (95% CI: 1.15–1.64) at baseline and GM 1.45 nmol/mmol creatinine (95% CI: 1.23–1.70) at euthyroidism, $P=0.44$.

Conclusions

To the best of our knowledge this is the first study to evaluate the impact of LT4 treatment in hypothyroid patients on the excretion of the nucleic acid metabolites 8-oxoGuo and 8-oxodG. We found no significant effect of restoration of euthyroidism on these biomarkers of whole-body oxidative stress. However, the negative finding may be explained by most of our patients having subclinical rather than overt hypothyroidism. Thus, larger studies of patients with more severe thyroid failure are needed to further explore the relationship between hypothyroidism, its treatment, and whole-body oxidative stress.

DOI: 10.1530/endoabs.70.EP516

EP517**Frequency of circulating antithyroid antibodies among the patients with thyroid diseases**

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Background

Increasing of the level of circulating Antithyroid autoantibodies suggested about autoimmune destruction in thyroid gland and not always depends from thyroid status. We aimed to study the frequency of circulating antithyroid autoantibodies (ATAB) in people with the different thyroid diseases.

Material and methods

In 25 people with high level of circulating ATAB blood serum TSH, T3, T4, glucose, ALAT, protein, albumin levels were measured. Thyroid gland ultrasound and ECG were performed. HR and BP were assessed.

Results

According to thyroid function in 64% were determined euthyroidism (TSH 1.6 ng/ml), in 24% with hyperthyroidism (TSH 0.1 ng/ml) and 12% with hypothyroidism (TSH 15.4 ng/ml). The average levels of ATAB were

comparable between the groups and were four times higher than in healthy subjects. There were no significant differences in blood Calcium, Phosphorus level and alkaline phosphatase activity, whereas blood total protein, albumin, ALAT levels were oppositely linked with thyroid function. Interestingly, higher level of ATAB were accompanied with impaired glycemia in 56% patients with ecthyreosis, in 17% with hyperthyreosis and no glycemia impairments were detected in patients with hypothyreosis.

Conclusion

In patients with higher circulating ATAB mostly detected euthyroidism (in 64%) than hyperthyroidism (in 24%) and hypothyroidism (in 12%). In people with higher ATAB the glycemia impairments were determined in those with euthyroidism (56%) and hyperthyroidism (17%).

DOI: 10.1530/endoabs.70.EP517

EP518**Management of subclinical hyperthyroidism presented by several cases**

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Subclinical hyperthyroidism (ScHyper) is a condition with suppressed TSH, and normal free T3 and free T4 hormones, affecting 10% of the population. There are two subgroups of patients, the first group with TSH lower than 0.1 U/l, and the second group with mildly suppressed TSH between 0.1 and the lower assay reference limit. The patients from the first group should be treated, but there is no evidence for therapy for the second group of patients. We present a three cases from the second group of patients with ScHyper and their different management of the disease. The pregnant women in the first trimester of pregnancy wasn't treated, just observed. The TSH spontaneously normalized in the second trimester of pregnancy. Patient with ScHyper caused by Graves' disease was treated only with beta blocker because of tachycardia. And, older women with multinodular goiter, who refused iodine 131 therapy, was treated with low doses of antithyroid drug and beta blocker. All three were without any complications from the disease. Treatment options of ScHyper are: antithyroid drugs, iodine 131 therapy, and surgery. Which of these will be chosen, or patient will be observed without therapy, depends to the specific causes.

Keywords: subclinical hyperthyroidism, Graves' disease, TSH reference values.

DOI: 10.1530/endoabs.70.EP518

EP519**The Role of Selenium and Iodine on thyroid status in the first trimester of pregnancy**

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Introduction

Pregnant women are at risk for selenium deficiency, which is known to maintain adequate function of immune system and thyroprotective enzymes. Same, iodine is an essential micronutrient for thyroid hormone synthesis and important endocrine regulator of early brain development. Our previous study revealed that 81% of pregnant women in Latvia have insufficient levels of iodine. The aim of the present study was to evaluate iodine and selenium supply during pregnancy in recent years, and to analyze its association with thyroid function and autoimmunity.

Methods

123 pregnant women during the first trimester were included in a cross-sectional study in 2017–2019. Urinary iodine concentration(UIC) was