

Endocrine Abstracts

May 2023 Volume 90
ISSN 1479-6848 (online)

25th European Congress of
Endocrinology 2023

13–16 May 2023, Istanbul, Turkey



published by
bioscientifica

Online version available at
www.endocrine-abstracts.org



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25th European Congress of Endocrinology 2023 European Society of Endocrinology 13–16 May 2023, Istanbul, Turkey

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EP962

A systematic review and meta-analysis on the associations of maternal iodine status and supplementation with thyroid function during postpartumPantea Nazeri¹, Elizabeth N. Pearce², Nahid Farrokhzad³, Fatemeh Baghalha⁴ & Mamak Shariat³¹Breastfeeding Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran; ²Section of Endocrinology, Diabetes and Nutrition, Boston University Chobanian & Avedisian School of Medicine, Boston, United States; ³Maternal, Fetal and Neonatal Research Center, Family Health Research Institute, Tehran University of Medical Sciences, Tehran, Iran; ⁴Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran**Background**

Iodine deficiency and excess are well-recognized risk factors for thyroid dysfunction. This systematic review and meta-analysis was designed, for the first time, to explore whether maternal iodine status or supplementation is associated with postpartum thyroid function.

Methods

Electronic databases, including the MEDLINE/PubMed, Web of Science, Embase, and Scopus were searched between January 1923 and December 2021 to identify relevant studies. We assessed the quality of studies using the Newcastle-Ottawa scale. The pooled mean thyroid stimulating hormone (TSH), free thyroxine (fT4), and thyroxin (T4) concentrations and 95% confidence intervals (CIs) were estimated based on maternal iodine status. Iodine status was defined based on median values <100 and ≥100 µg/l for urinary iodine concentration (UIC) or breast milk iodine concentration (BMIC) during postpartum. We used a fixed/random effect model based on the absence/presence of heterogeneity. A narrative synthesis of the data was performed for iodine supplementation.

ResultsOf the 2175 studies were identified, 18 were eligible for inclusion in the meta-analysis. Thyroid hormones in women who had UIC ≥ 100 µg/l were higher than those of women with UIC <100 µg/l during the postpartum period. The pooled values [95% CI] for TSH, fT4, and T4 concentrations in iodine-sufficient women were 1.31 [1.09, 1.53] mIU/l, 14.26 [13.86, 14.66] pmol/l, and 91.97 [88.61, 95.33] nmol/l, respectively; whereas the corresponding values in iodine-deficient women were 1.00 [0.84, 1.16] mIU/l, 12.26 [10.49, 14.03] pmol/l, and 79.80 [59.53, 100.07] nmol/l, respectively. However, none of these differences was significant. The concentration of thyroid hormones in women with BMIC <100 µg/l and ≥100 µg/l were within the normal range. Iodine supplementation was administered from 1 week to 9 months postpartum as supplements doses from 75 to 300 µg oral iodine daily (*n* = 3) or a single 400 mg dose of iodized oil (*n* = 1). In none of these, significant differences in thyroid parameters of postpartum women between the iodine-supplemented and control groups were observed.**Conclusion**

Findings of the present systematic review and meta-analysis showed no effects of iodine status or supplementation on thyroid hormones in postpartum women. Further investigations are still needed to explore the effects of different degrees of iodine deficiency as well as iodine excess on different maternal thyroid parameters during postpartum and effects on thyroid function in breastfed offspring.

DOI: 10.1530/endoabs.90.EP962

EP963

Frequency of Coeliac Disease in Children with Chronic Autoimmune ThyroiditisOksana Khyzhnyak¹, Olga Oleksyk² & Roman Nikolaiev¹¹V. Danilevsky Institute of Endocrine Pathology Problems, Clinical Endocrinology, Kharkiv, Ukraine; ²A. Novak Transcarpathian Clinical Regional Hospital, Endocrinology, Uzhgorod, Ukraine**Introduction**

Chronic autoimmune thyroid disease (ATD) or Hashimoto thyroiditis (HT) is one of the main thyroid diseases in pediatric age. HT characterized by the production of anti-thyroid antibodies, by an infiltration of autoreactive B and T lymphocytes into the thyroid parenchyma and by alterations in thyroid function. Coeliac disease (CD) is a systemic autoimmune disease caused by gluten ingestion in genetically predisposed subjects. At presents with a pathognomonic enteropathy, a variety of clinical manifestations, positivity for specific antibodies, positivity for typical haplotypes HLA DQ2/DQ8. The close relationship between celiac disease and glandular autoimmunity can be largely explained by sharing of a common genetic background. Haplotypes HLA B8 and DR3 occur with increased

frequency in adults and children with CD, as well as in ATD. Modern international recommendations recommend screening for CD in children with already diagnosed ATD.

The aim

of this study was to investigate the incidence of celiac disease in children with ATD.

Methods

65 children with ATD aged 7-17 years (57 girls, 8 boys) were examined. We studied the level of TSH, free T4, antibodies to thyroperoxidase (Anti-TPO), antibodies to thyroglobulin (Anti-TG) gliadin immunoglobulin G (Anti-IgG GI), anti-tissue transglutaminase (Anti-IgG TGT), ultrasound of the thyroid gland (US ThG). Diagnosis of autoimmune thyroiditis was made if Anti-TPO > 35 IU/ml or Anti-TG > 20 IU/ml. Diagnosis of CD was made according recommendation from the European Society for the Study of Coeliac Disease (ESSCD) (2019).

ResultsAmong the children with ATD 32.3% (*n* = 21) were diagnosed with hypothyroidism, the patients received levothyroxine replacement therapy and were in a state of medical euthyroidism at the time of inclusion in the study. CD was detected in 10.8% (*n* = 7, all girls) of the patients. The mean age (12.5 ± 1.6 yrs) at the diagnosis of HT was significantly lower in patients with higher levels Anti-TPO (432.2 ± 23.8 IU/ml) and Anti-TG (86.6 ± 12.5 IU/ml). After prescribing a gluten-free diet for 6 months to children with a positive level of Anti-IgG TGT, patients showed a statistically significant decrease in the level of Anti-TPO and in 3 patients (280.4 ± 18.2 IU/ml) and decrease the dose of levothyroxine by an average of 30%.**Conclusion**

Frequency of CD in children with ATD was 10.8%. Gluten-free diet for 6 months has some effect on improving and maintaining euthyroid status of CD patients and decreased anti-thyroid antibodies.

Keywords

Autoimmune thyroid disease; Coeliac disease; Gluten-Free Diet.

DOI: 10.1530/endoabs.90.EP963

EP964

Factors associated with elevated liver enzymes in patients with uncontrolled hyperthyroidism

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Liver dysfunction is common in patients with hyperthyroidism. The underlying mechanisms remain unclear. Predictors of liver dysfunction and recovery are controversial. The aim of this study was to assess the prevalence of elevated liver enzymes in patients with uncontrolled hyperthyroidism and to identify its predictive factors.

Methods

This is a retrospective study conducted in 131 patients with hyperthyroidism admitted in the endocrinology department of La Rabta Hospital (Tunisia) between January 2009 and December 2018. Patients with subclinical hyperthyroidism and those with controlled thyroid function under treatment were not included. Liver enzymes: Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) were measured in all the patients at admission. Clinical and biological data were reviewed to identify factors associated with elevated liver enzymes (AST and/or ALT) using univariate and multivariate analysis.

ResultsThe mean patient age was 44.1 ± 16.9 years. They were 52 men (39.7%) and 79 women (60.3%). Hyperthyroidism was related to Graves' disease in 74.8% of cases. The mean AST level was 25.6 ± 18.4 UI/l (normal range: 5-34). It was elevated in 16.0% of patients. The mean ALT level was 28.8 ± 22.5 UI/l (normal range: 6-55). It was elevated in 8.4% of patients. Elevated liver enzymes (AST and/or ALT) have been observed in 18.3% of cases. FT4 levels were significantly higher in patients with elevated liver enzymes (6.0 ± 4.2 vs 4.3 ± 2.1 ng/dl, *P* = 0.006). FT4 higher than 4 times normal range was associated with elevated liver enzymes (41.7% vs 19.6%, *P* = 0.02, OR [95%CI] = 2.9 [1.2-7.4]). Age, gender, smoking status, BMI, etiology of hyperthyroidism, and anti-TSH receptor antibody levels were not associated with elevated liver enzymes. After adjustment for age and gender, FT4 level higher than 4 times the normal range remains an independent parameter associated with elevated liver enzymes (*P* = 0.05; ORa [95%CI] = 2.5 [1.0-6.7]).**Conclusion**

Elevated liver enzymes are common in hyperthyroidism. The biological severity of hyperthyroidism seems to be the main predictive factor of this liver dysfunction.

DOI: 10.1530/endoabs.90.EP964

EP965

The role of PTEN methylation level changes in papillary thyroid carcinoma diagnosis and prognosis

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Introduction

Papillary thyroid cancer (PTC) is the most common type of thyroid cancer (85%–90%). Today Fine needle aspiration biopsy (FNAB) is the diagnostic tool for the evaluation of thyroid nodules because of its accuracy and cost-effectiveness, but FNAB also has limitations, as it is quite challenging to take a biopsy from a small thyroid nodule moreover FNAB diagnosis is doubtful in up to 20% of cases. Therefore, non-invasive biomarkers of PTC are needed.

Aim of the study

To evaluate methylation level changes of the PTEN gene in FFPE tissue samples and peripheral blood plasma samples of PTC patients before and after surgery.

Methods

The study included 50 FFPE tissue samples from 25 patients and 68 patients plasma samples with a histologically confirmed diagnosis of PTC. Peripheral blood samples were collected before surgery and 4-6 weeks after surgery. Methylation level changes of the PTEN gene were analysed in plasma and FFPE tissue samples by quantitative methylation-sensitive polymerase chain reaction.

Results

Paired sample analysis showed statistically higher PTEN methylation levels in FFPE tumor tissue samples compared to non-cancerous tissue samples ($P = 0.016$). Plasma PTEN methylation levels were compared before and after PTC surgery. Significantly lower levels of PTEN methylation were found in samples collected after surgery compared to samples collected before surgery ($P = 0.031$).

Conclusion

PTEN methylation level changes may be a promising minimal invasive biomarker in predicting PTC prognosis and diagnosing PTC.

DOI: 10.1530/endoabs.90.EP965

EP966

Bone metastases of differentiated thyroid cancer: characteristics and prognostic factors in a multicenter series

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Objective

To describe the characteristics, survival and prognostic factors of a cohort of patients with bone metastases (BM) of differentiated thyroid carcinoma (DTC).

Methods

Multicenter retrospective observational study. Patients diagnosed with DTC and BM between 1980-2021 were included. A Cox regression was performed to study prognostic factors for 5- and 10-year survival. Kaplan-Meier and log-rank tests were performed for survival analysis and comparison between groups.

Results

$n = 63$. Follow-up = 35(15-68)months. 30(48.4%) presented with BM at the initial DTC evaluation. 38(60.3%) had papillary variant. 32(50.8%) presented multiple BM. The most frequent location was the spine (60.3%). Other metastases were present in 77.8%, mainly pulmonary (69.8%). 54(85.9%) received treatment with I131, with BM uptake in 31(49.2%). 25(39.7%) received treatment with multikinase inhibitors. 34(54%) presented skeletal related events. 34(54%) died. 5- and 10-year survival was 42.4% and 20.4% respectively. Significant prognostic factors in multivariate analysis were the presence of N1 (HR 2.916 (95% CI 1.013-8.391); $P = 0.047$) and treatment with I131 (HR 0.214 (95% CI 0.069-0.665); $P = 0.008$) at 5 years; and the presence of other metastases (HR 6.844 (95% CI 1.017-46.05); $P = 0.048$) and treatment with I131 (HR 0.23 (95% CI 0.058-0.913); $P = 0.037$) at 10 years.

Conclusions

Our study reflects the management of patients with BM of DTC in real clinical practice in several centers in southern Spain. The use of antiresorptive drugs was lower than recommended based on current evidence on their preventive role in SRE. Overall survival at 5 and 10 years was lower in patients who were not treated with I131, had nodal involvement and/or had other metastases.

DOI: 10.1530/endoabs.90.EP966

EP967

The role of thyroid peroxidase antibodies on the risk of thyroid cancer: a systematic review and meta-analysis of surgical cohort studies

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Introduction

Hashimoto's thyroiditis raises the risk for thyroid cancer (TC) in surgical series, but the role of thyroid peroxidase antibodies (TPO) remains controversial in that regard. We designed the present study to evaluate the effect of preoperative TPO titers in the risk of DTC.

Methods

A comprehensive search was conducted in PubMed, CENTRA and Scopus databases in November 2021 for the terms "thyroid cancer" and "TPO" or "peroxidase antibodies". We characterized the differential risk found in patients with high titers of TPO (TPO+), as compared to those with low or undetectable titers (TPO-) with regard to TC. Data are expressed as odds ratio (OR) with 95% confidence interval (CI).

Results

We retrieved and reviewed 408 records; 22 retrospective cohort studies (2006-2021) from 7 countries and $n = 30,077$ subjects, fulfilled the eligibility criteria: 15 studies in East Asia with $n = 24,096$ subjects and 7 studies in the Western world with $n = 5981$ subjects (19.9%). These comprised $n = 17,374$ subjects with benign disease and $n = 12,703$ with TC. The reference used for TPO+ was 23.6 ± 18.8 (Range 5.1-50.0 IU/ml); $n = 6,105$ patients were TPO+ and $n = 22,882$ were TPO-. TC was present in $n = 2,817$ TPO+ patients (46.14%) and $n = 9,122$ TPO- patients (39.87%), RR 1.31 (1.24 - 1.39, $P < 0.0001$). A high titer of TPO was associated with increased risk for DTC in Asian cohorts, [OR 1.21 (1.13-1.29, $P < 0.0001$)] and Western world alike, [OR 1.91 (1.66-2.21), $P < 0.0001$]; That risk was statistically significantly higher in the Western world cohorts as compared to east Asia cohorts OR 1.65 (1.44-1.89), $P < 0.0001$.

Conclusions

Thyroid peroxidase antibodies are an integral part of Hashimoto's thyroiditis, which is a well characterized risk factor for thyroid cancer and seem to increase that risk as well. That effect seems significantly higher in the Western world, as compared to the East Asia region. Further studies are needed to characterize the effects of the immune response, with regard to thyroid cancer risk.

DOI: 10.1530/endoabs.90.EP967

EP968

Benign and Malignant Thyroglossal Duct Cyst Remnants: Systematic Review and Case Series of 1842 Surgical Cases

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