with hematoxylin/eosin. T cells were detected by $CD3^+$, $CD4^+$, and $CD8^+$ antibodies and the antigen-presenting dendritic cells with $CD1a^+$ and $CD35^+$ antibodies (DakoCytomation, Glostrup, Denmark).

RESULTS: Before treatment, all children with GD had increased thyroid autoantibody levels, an increased percentage of $CD4^+$ helper cells, and decreased levels of $CD8^+$ suppressor/cytotoxic T cells, which resulted in an elevated CD4/CD8 ratio. The percentage of $CD19^+Cd5^+$ B cells was increased, although the total population of $CD19^+$ B cells did not differ from that of the control group. The number of lymphocytes in the thyroid was decreased in 10 patients after long-term thiamazole treatment. In 5 patients with short-term therapy (<6 months after relapse of GD), the lymphocytes had formed lymphatic follicles: antigen-presenting dendritic cells $CD1a^+CD35^+$ in the germinal center and T-helper $CD4^+$, T-suppressor $CD8^+$, and B cells $CD79^+$ on the edges.

CONCLUSIONS: The primary defect of immunoregulation in GD consists of an increase of T-helper lymphocytes with a simultaneous decrease in the number of T-cytotoxic/suppressor cells. Thiamazole therapy probably leads to reduction of the lymphocyte amount in the thyroid.

*HLA-DQB1*05* ASSOCIATION WITH HASHIMOTO THYROIDITIS IN CHILDREN OF NORTHERN GREEK ORIGIN

Submitted by Styliani Giza

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INTRODUCTION: Hashimoto thyroiditis (HT), an organ-specific autoimmune disorder of the thyroid gland, is considered to be associated with the major histocompatibility complex. Association studies of human leukocyte antigens (HLAs) with HT concern adults and have not revealed consistent results.

OBJECTIVE: We sought to investigate *HLA-DRB1* and *HLA-DQB1* gene polymorphisms in Greek children and adolescents with HT.

METHODS: We analyzed the distribution of *HLA-DRB1* and *HLA-DQB1* alleles in 17 Greek children and adolescents with HT and in 181 randomly chosen healthy subjects from northern Greece. The typing of *HLA-DRB1* and *HLA-DQB1* genes was performed by using polymerase chain reaction with sequence-specific primers. Differences of frequencies for HLA alleles were tested by the χ^2 test.

RESULTS: There was no significant association detected between HT and *HLA-DRB1* or *HLA-DQB1* alleles. However, *HLA-DRB1*16* was slightly significantly increased in patients with HT (41.2%) compared with that in controls (19.3%) ($P = .057$; relative risk: 2.92), and *HLA-DQB1*05* was significantly increased in patients with an age of diagnosis of >10 years (87.5%) as compared with those with an age of diagnosis of ≤10 years (33.3%) ($P = .05$; relative risk: 14).

CONCLUSIONS: This is the first study to examine children and adolescents from northern Greece with HT and analyze the distribution of *HLA-DRB1* and *HLA-DQB1* alleles according to the age of onset of HT. However, this study needs to include a greater number of patients to ascertain the possibility of an association and avoid the result of a chance event or random variation.

IMPAIRED DIURNAL BLOOD PRESSURE AND HEART RATE VARIATION AND THEIR RELATIONSHIP WITH LEFT-VENTRICULAR FUNCTION IN ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS

Submitted by Kyriaki Karavanaki

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INTRODUCTION: Diabetic cardiomyopathy is a well-defined complication of diabetes that occurs in the absence of ischemic heart disease or hypertension and has been associated with autonomic dysfunction.

OBJECTIVE: Our aim was to evaluate diurnal blood pressure (BP) fluctuations and autonomic function and their possible association with left-ventricular function in adolescents with type 1 diabetes mellitus.

METHODS: In 48 normotensive, normoalbuminuric diabetic adolescents, with a mean (±SD) age of 17.3 (±4.1) years and diabetes duration of 8.5 (±3.3) years, 24-hour ambulatory BP and heart rate (HR) monitoring was performed. Left-ventricular end-diastolic and end-systolic diameters were estimated by echocardiography, and left-ventricular mass index (LVMI) was calculated.

RESULTS: The patients were divided into 2 groups according to the absence of decrease (nondippers) or the decrease (dippers) of nocturnal diastolic BP. The nondippers presented, in comparison with the dippers, reduced mean HR during 24 hours (79.6 vs 84.0 beats/minute; $P = .05$) and also during daytime (81.3 vs 86.0

beats/minute; $P = .05$). The nondippers also presented greater end-systolic diameter (28.7 vs 25.9 mm; $P = .001$) and left-ventricular end-diastolic diameter (47.8 vs 45.1 mm; $P = .040$) and greater LVMI (90.2 vs 78.3 g/m^2; $P = .044$) compared with the dippers. During stepwise multiple regression, the most important factors affecting LVMI were mean HR (day) ($b = -0.40$; $P = .001$), high-frequency variable of heart rate variability ($b = 0.38$; $P = .016$), and hemoglobin A1c: ($b = 0.67$; $P = .001$).

CONCLUSIONS: A group of normotensive diabetic adolescents with abnormal nocturnal BP reduction and impaired heart rate variation also had impaired left-ventricular function. Our findings suggest that an altered diurnal BP profile, as a result of autonomic dysfunction, may contribute to the development of left-ventricular hypertrophy in patients with type 1 diabetes mellitus.

ADIPONECTIN AND PEROXISOME PROLIFERATOR-ACTIVATED RECEPTOR γ EXPRESSION IN SUBCUTANEOUS AND OMENTAL ADIPOSE TISSUE IN CHILDREN

Submitted by Xiaonan Li
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INTRODUCTION: Adiponectin is an adipocyte-specific protein with insulin-sensitizing properties. Peroxisome proliferator-activated receptor γ (PPARγ) may be involved in its gene transcription.

OBJECTIVE: The aim of this study was to compare the expression levels of the genes that encode adiponectin and PPARγ in subcutaneous and omental adipose tissue in children in relation to age and anthropometric variables.

METHODS: Paired biopsies (from subcutaneous and omental adipose tissue) were obtained from 53 children (age: 0.2–14.0 years; BMI: 12.5–25.8 kg/m^2). Messenger RNA (mRNA) levels of adiponectin and PPARγ were measured by using reverse-transcription and quantitative real-time polymerase chain reaction.

RESULTS: Adiponectin mRNA levels in adipose tissue were positively associated with PPARγ mRNA levels in children (subcutaneous adipose: $r = 0.73$, $P < .001$; omental adipose: $r = 0.78$, $P < .001$). In overweight children, the median adiponectin mRNA level was lower in omental adipose tissue (odds ratio: 0.51 [95% confidence interval: 0.1–2.17]) compared with subcutaneous adipose tissue (odds ratio: 1.29 [95% confidence interval: 0.16–5.08]) ($P = .032$) but not in normal-weight children ($P = .54$), and the difference remained significant after adjustment for age ($P = .045$).

CONCLUSIONS: The close association between adiponectin and PPARγ expression supports the hypothesis that PPARγ is involved in adiponectin gene regulation. The fact that adiponectin expression was decreased in omental adipose tissue relative to subcutaneous adipose tissue in overweight children suggests that a risk of insulin resistance may be present in childhood, which allows such resistance to develop after a relatively short duration of overweight.

EFFECT OF BODY WEIGHT ON BONE AGE AND HORMONAL PARAMETERS IN CHILDREN WITH PREMATURE ADRENARCHE

Submitted by Asteroula Papathanasiou
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OBJECTIVE: Our goal was to investigate the effect of body weight on bone age (BA) and hormonal features in children with benign premature adrenarche.

METHODS: We studied 221 children (175 girls, 46 boys) with premature adrenarche (pubic and/or axillary hair at <8 years of age in girls and <9 years of age in boys) and mean chronological age (CA) at presentation of 7.0 years (girls) and 7.8 years (boys). Anthropometric features and laboratory data (dehydroepiandrosterone sulfate [DHEA-S], 17-hydroxyprogesterone, Δ^4-androstenedione [Δ^4-A], testosterone, estradiol, insulin-like growth factor I [IGF-I], cholesterol, triglycerides, high- and low-density lipoprotein cholesterol, and BA) were recorded. The population was divided into 3 groups according to BMI: (1) normal weight, (2) overweight (BMI: 85th–95th percentile), and (3) obese (BMI: >95th percentile). Children with late-onset congenital adrenal hyperplasia were excluded from study.

RESULTS: Mean CA of adrenarche was 6.3 years (girls) and 7.1 years (boys). The percentages of overweight and obese children was significantly higher than those reported in the general population of children in Greece. Obese children had significantly more advanced BA compared with overweight and normal-weight children. Higher levels of DHEA-S and Δ^4-A were observed in overweight and obese girls compared with normal-weight girls, whereas higher levels of DHEA-S, testosterone, and IFG-I were observed in overweight and obese boys (Table 1). No statistically significant difference was observed between the 3 groups in the levels of 17-hydroxyprogesterone, estradiol, cholesterol, triglycerides, or high- and low-density lipoprotein cholesterol.

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Pediatrics 2008;121;S104
DOI: 10.1542/peds.2007-2022KK

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