

serum triglycerides, low level of high-density lipoprotein cholesterol), systemic arterial hypertension, and others (eg, hypertransaminemia, hyperuricemia, orthopedic lesions) were the most common.

CONCLUSIONS: Obesity in children and adolescents is a severe world public health problem. Obese children and adolescents frequently had associated comorbidity. It is necessary to improve health, juridical, and educational world policies that prevent and support the treatment of obesity in early life.

THYROID FUNCTION AND GHRELIN AND LEPTIN LEVELS IN OBESE CHILDREN AND ADOLESCENTS WITH AND WITHOUT INSULIN RESISTANCE

Submitted by Charilaos Stylianou

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INTRODUCTION: Thyroid hormones ghrelin, leptin, and insulin are implicated in energy metabolism.

OBJECTIVE: The objective of this study was to investigate any relationship between thyroid function and ghrelin and leptin levels in selected euthyroid (thyrotropin: 0.35–4.94; free thyroxine [fT4]: 0.8–1.8; no autoimmune thyroiditis or iodine deficiency, no medications intake) obese children and adolescents with and without insulin resistance (IR).

METHODS: Forty obese children and 40 obese adolescents were enrolled. BMI, percentage of body fat, fasting glucose, insulin, ghrelin, leptin, thyrotropin, free triiodothyronine (fT3), and fT4 were measured. IR was estimated with homeostasis model assessment of IR index. The Mann-Whitney *U* test for independent samples was applied. Correlations were assessed by the Spearman coefficient.

RESULTS: In adolescents, fT3 levels were positively correlated with insulin and homeostasis model assessment of IR. In children, fT4 levels were negatively correlated with BMI and percentage of body fat (Table 1).

TABLE 1. Thyroid Function and Ghrelin and Leptin Levels in Obese Children and Adolescents With and Without Insulin Resistance

	Obese Children			Obese Adolescents		
	IR	NIR	<i>P</i>	IR	NIR	<i>P</i>
<i>n</i>	20	20		20	20	
BMI, kg/m ²	28.87 ± 3.84	27.11 ± 4.53	.121	30.54 ± 4.74	29.43 ± 3.87	.678
Body fat, %	35.68 ± 4.71	33.28 ± 4.98	.157	35.59 ± 6.01	34.33 ± 5.14	.461
Homeostasis model assessment, IR	5.00 ± 4.04	1.55 ± 0.64	.000	4.51 ± 1.53	1.80 ± 0.56	.000
Insulin, μU/mL	22.53 ± 15.02	7.33 ± 2.64	.000	20.04 ± 5.76	9.01 ± 2.65	.000
Ghrelin, pmol/L	831.29 ± 379.19	902.96 ± 360.49	.355	860.12 ± 289.89	1102.09 ± 366.10	.043
Leptin, ng/mL	36.22 ± 14.94	35.20 ± 23.43	.301	42.31 ± 21.81	34.75 ± 17.93	.221

	Obese Children			Obese Adolescents		
	IR	NIR	<i>P</i>	IR	NIR	<i>P</i>
Thyrotropin, μU/mL	2.28 ± 1.22	2.15 ± 0.75	.779	2.20 ± 1.15	2.06 ± 1.24	.659
fT3, pg/mL	4.61 ± 0.92	4.59 ± 0.64	.989	4.19 ± 0.68	4.12 ± 1.08	.529
fT4, ng/dL	1.32 ± 0.14	1.37 ± 0.22	.495	1.22 ± 0.12	1.29 ± 0.17	.398

CONCLUSIONS: The observed positive correlation between IR and fT3 in adolescents might indicate an interplay between thyroid function and IR. Ghrelin levels are negatively affected by IR but not directly associated with thyroid hormone concentrations.

Pediatric Research

ROLE OF NERVE GROWTH FACTOR IN ALLERGIC AND INFLAMMATORY LUNG DISEASES

Submitted by Basma Abdelmoez

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INTRODUCTION: Nerve growth factor (NGF) is a neurotrophin that exerts an important role in the development and functions of the central and peripheral nervous system, as it was originally discovered for its properties of simulating growth and differentiation of neurons; however, it was recently documented that several immune cells, such as mast cells, lymphocytes, and eosinophils, produce, store, and release NGF. Neurotrophins, including NGF, are constitutively expressed by resident lung cells and produced in increasing quantities by immune cells that invade the airways under inflammatory conditions. Furthermore, NGF appears as a promoter of allergic airway inflammation by increasing eosinophil and lymphocyte recruitment into the lungs. Neurotrophin receptors are expressed on several immune cells, including mast cells, T cells, B cells, and macrophages.

OBJECTIVE: The objective of this study was to clarify the role of NGF in allergic and inflammatory lung diseases.

METHODS: Our study was conducted of 90 children who attended the outpatient pediatric clinic or were admitted to the inpatient pediatric department of Elminia University Hospital. They were classified into 3 groups as follows: group 1, 35 children with asthma during the acute attack; group 2, 35 children with severe inflammatory lung disease and bronchopneumonia; group 3, 20 seemingly healthy children who were age and gender matched to the children with disease. For all children, the following were done: careful history taking, thorough clinical examination, chest radiograph,

complete blood count, erythrocyte sedimentation rate, and reverse-transcriptase polymerase chain reaction (RT-PCR) to detect NGF receptor mRNA expression on purified eosinophils that were obtained from peripheral blood.

RESULTS: We found only 3 patients who had asthma and had positive NGF receptors on isolated eosinophils from the peripheral blood by RT-PCR; however, all studied patients with bronchopneumonia had negative results. Moreover, there was a statistically significant difference between patients with positive and negative results for NGF receptors on isolated eosinophils by RT-PCR regarding age, the frequency of recurrence of asthma attacks, and positive history of other atopic diseases such as allergic dermatitis and allergic rhinitis; however, there was no statistically significant difference between patients with positive and negative results regarding gender, type of feeding, or family history.

CONCLUSIONS: There is a strong association between NGF receptors on isolated eosinophils and the severity of allergic lung diseases and bronchial asthma.

PREVALENCE OF TUBERCULOSIS AMONG CHILDREN WHO HAD TYPE 1 DIABETES AND WERE ADMITTED TO ELMINIA UNIVERSITY HOSPITAL

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INTRODUCTION: Tuberculosis has been a cause of significant morbidity and mortality for humans throughout history. There are 20 million cases of tuberculosis worldwide with 8 million new cases each year. Three million deaths annually are directly attributable to tuberculosis. Previous clinic-based studies in developed countries demonstrated an association between tuberculosis and diabetes but did not determine whether this is attributable an increase in recently transmitted or reactivated infection of tuberculosis.

OBJECTIVE: The objective of this study was to identify the epidemiologic relationship between tuberculosis and diabetes in children by using MycoDot, a simple, rapid, and reliable test.

METHODS: This study was a cross-sectional study of 2 groups. The first group was 110 children who had type 1 diabetes, were aged 5 to 10 years, and had a regular follow-up in the pediatric diabetes outpatient clinic in Elminia University Hospital. The second group consisted of 110 children (as a control group without diabetes) who were age and gender matched from the pediatric outpatient clinic in Elminia University Hospital. The chil-

dren were subjected to tuberculin skin test and Ziehl Neelsen staining on sputum. The children with diabetes only were subjected to chest radiograph. The children's sera were subjected to MycoDot test.

RESULTS: Among the 110 children with diabetes, 6 (5.5%) were determined to have positive tuberculosis results using the MycoDot technique. Only 1 (0.9%) control patient was determined to have a positive tuberculosis result using the same test. Among the children with diabetes (110), 4 (3.8%) were found to have positive tuberculosis results by tuberculin skin test, whereas 2 (1.8%) were found to have positive tuberculosis results by Ziehl Neelsen staining on sputum.

CONCLUSIONS: Many studies have explored the association between diabetes and tuberculosis. In developed countries, studies dating to the first half of the 20th century demonstrated considerable increase in the frequency of tuberculosis among patients with diabetes, although the proportion with comorbidity ranged widely from 1.0% to 9.3%. Other studies have shown a higher frequency of diabetes among individuals with tuberculosis. In our results, 5.5% of children with diabetes had tuberculosis by MycoDot test, which is a simple and reliable test, whereas only 1 (0.9%) positive result was found in the group without diabetes by the same test. The former indicates that risk for tuberculosis increases among children with diabetes, which indicates that regular screening for the presence of active tuberculosis among children with diabetes should be conducted.

STUDY ON THE DAMAGE OF CULTURED HIPPOCAMPAL NEURONS INDUCED BY SEIZURE-LIKE DISCHARGE AND THE EFFECT OF BRAIN-DERIVED NEUROTROPHIC FACTOR ON THE INJURED NEURONS

Submitted by Li Jiang

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OBJECTIVE: The objective of this study was to observe the damage of cultured hippocampal neurons induced by seizure-like discharge and study the effects of brain-derived neurotrophic factor (BDNF) on such injury.

METHODS: Primary cultured hippocampal neurons were randomly divided into 3 groups: (1) control group: cultured neurons were exposed to regular extracellular solution for 3 hours, then returned to regular medium; (2) seizure-like discharge group: cultured neurons were exposed to magnesium-free extracellular solution for 3 hours, then maintained for 24 hours in regular medium; and (3) BDNF-treated group: cultured neurons were precultured with regular medium added to BDNF (200 ng/mL) for 24 hours and exposed to magnesium-free

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