Plasma visfatin level and its association with apolipoproteins A1 and B in hypothyroid children

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OBJECTIVES

Thyroid diseases mainly hypothyroidism are one of the most prevalent endocrine disorders in children. Hypothyroidism is associated with cardiometabolic disorders such as hyperlipidemia. There are evidences that some biomarkers including adipokines could be used as predictors of these consequences. Adipokines could affect on different cardiometabolic factors through endocrine system as well as autocrine and paracrine mechanisms. Visfatin is one of the adipokines which have been introduced recently in this field. Its association with metabolic syndrome, atherosclerosis, diabetes and endothelial dysfunction has been reported in recent studies. The association between visfatin and thyroid hormones has also investigated in some studies in adults population but the results remain obscure. Therefore, the present study was conducted to appraise association between the level of serum visfatin and apolipoproteins' prior to and after levothyroxine therapy in patients with hypothyroidism.

METHODS

In this cross-sectional study, children and adolescents aged 3-18 years old, diagnosed with overt and subclinical hypothyroidism enrolled. Before treatment initiation, the level of Thyroid-stimulating hormone (TSH), anti-Thyroid peroxidase (anti-TPO), anti-Thyroglobolin (anti TG), visfatin, triglyceride, cholesterol, low density lipoprotein (LDL), high density lipoprotein (HDL), apolipoprotein A1 (ApoA1) and apolipoprotein B (ApoB) as well as body mass index(BMI) of each participant was measured. Selected patients underwent levothyroxine therapy. After three months treatment, the above mentioned variables (except for anti TPO and anti TG) were measured. The levels of studied variables were compared before and after levothyroxine treatment. The association between visfatin and studied variables was determined also.

Table1: Mean(SD) levels of BMI, thyroid hormones, lipid profile and visfatin in hypothyroid children and adolescence before and after treatment with levothyroxine

Variables	Before treatment with levothyroxine	After treatment with levothyroxine	P value
BMI(kg/m²)	17.80(3.08)	17.70(2.88)	P<0.05
Thyroid hormones			
-TSH(mIU/L)	19.09(23.10)	2.22(1.04)	P<0.05
-T4(µg/dL)	112.49(35.96)	114.65(18.94)	P<0.05
-T3(µg/dL)	2.72(0.98)	2.48(0.52)	P<0.05
Lipid profile(mg/dl)			
-Cholesterol	175.80(19.86)	159.13(24.26)	P<0.05
-Triglyceride	138.63(25.50)	129.50(23.99)	P<0.05
-LDL	101.30(11.98)	92.60(10.01)	P<0.05
-HDL	40.40(5.74)	48.16(6.29)	P<0.05
-ApoA1	146.63(20.46)	164.93(20.19)	P<0.05
-Apo B	118.60(19.14)	105.33(17.54)	P<0.05
Visfatin (ng/ml)	860.3(250.6)	522.90(229.70)	P<0.05

RESULTS

In this study 30 hypothyroid patients (16 girls and 14 boys) were studied. Overt and subclinical hypothyroidism was presented in 6 (20%) and 24(80%) of patients, respectively. Mean(SD) age of studied population was 10.2(5.2).Anti TPO and antiTG was positive in11(36.7%) and 8(26.7%) of studied hypothyroid patients. After treatment with levothyroxine the plasma level of visfatin , ApoB, TG, cholesterol, and LDL decreased and the level of HDL and ApoA1 decreased significantly(P<0.05).BMI had not significant changes after treatment(P>0.05)There was not any significant correlation between visfatin and patient's lipid profile (P>0.05).

CONCLUSIONS

The findings of current study indicated that levothyroxine treatment of hypothyroid children and adolescents in accordance with improvement of lipid profiles of the patients, results in significant decrease in plasma visfatin level. So, it is suggested that visfatin could be used as a predictive risk factor of cardiovascular diseases in hypothyroid children. Lack of association between visfatin and lipid profiles, may be due to small sample size. Further it could be suggested that, the role of visfatin in thyroid hormone stabilization process might be regulated upon further and unknown mediators, which should be investigated in future researches.

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