

Vitamin D status in obese children and its relationship with leptin and adiponectin

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Introduction

- Obesity is a major health problem worldwide and its incidence is increasing annually. Adipose tissue produces and regulates many hormones and cytokines which have relationship with obesity comorbidity. Serum level of vitamin D has been previously reported to have a negative relationship with obesity.

Objective

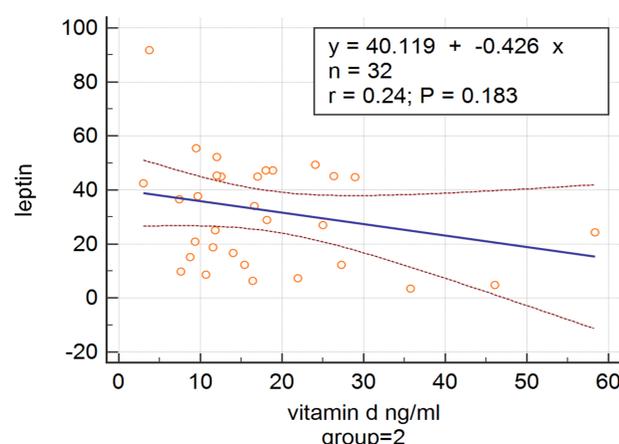
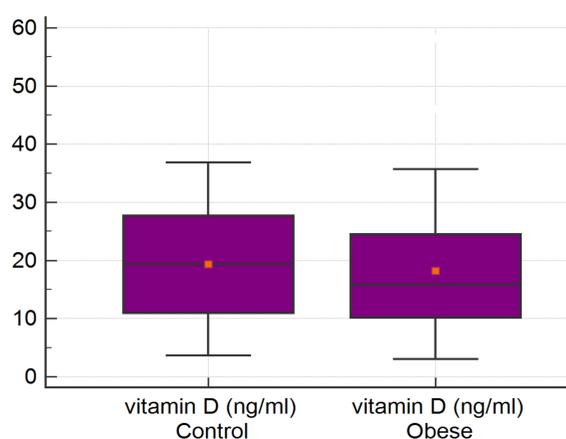
- To evaluate the relationship between vitamin D status and leptin, adiponectin, lipid profile and Insulin resistance in obese children.

Material & method

- A total of 61 children including 32 obese (BMI > 95th percentile according to CDC curves for sex and age) and 29 normal weight subjects, aged 4-17 year, were randomly enrolled in this study. After clinical evaluation and anthropometric measurements, fasting serum level of vitamin D, leptin and adiponectin were assessed using ELISA method. Fasting plasma level of total cholesterol, HDL cholesterol (HDL-C), LDL cholesterol (LDL-C), Triglyceride (TG), glucose and insulin were measured with colorimetric kits and homeostasis model assessment of insulin resistance (HOMA-IR) was calculated.

Result

- In our study there was not any significant difference of vitamin D level between obese and normal-weight children. However, in obese children the levels of serum leptin, total cholesterol, LDL-C, TG and HOMA-IR were significantly higher than control group, while HDL-C did not show any significant difference. Adiponectin in obese cases was significantly lower than that in control group. There was a significant negative correlation between leptin and vitamin D in control group but the same result was not observed in obese group.



| | Control | Obese | P value |
|--------------------------|-----------------|-------------------|---------|
| Age (years) | 9.68 ± 2.49 | 11.04 ± 2.71 | N.S |
| BMI (Kg/m ²) | 16.92 ± 2.35 | 28.7561 ± 6.44229 | <0.05 |
| HC (cm) | 46.70 ± 42.85 | 96.66 ± 12.85 | <0.05 |
| Leptin | 11.42 ± 10.37 | 32.34 ± 20.98 | <0.05 |
| FPG (mg/dl) | 86.65 ± 10.88 | 90.03 ± 9.75 | N.S |
| TG (mg/dl) | 75.03 ± 40.65 | 117.00 ± 60.61 | <0.05 |
| TC (mg/dl) | 151.48 ± 24.18 | 173.09 ± 26.18 | <0.05 |
| LDL-C (mg/dl) | 71.2759 ± 10.52 | 98.70 ± 25.86 | <0.05 |
| HDL-C (mg/dl) | 46.37 ± 9.57 | 47.46 ± 10.12 | <0.05 |
| Insulin (μIU/dl) | 9.42 ± 6.87 | 25.26 ± 18.01 | <0.05 |
| HOMA-IR | 2.033 ± 1.587 | 5.779 ± 4.728 | <0.05 |
| vitamin d ng/ml | 86.65 ± 9.53 | 18.22 ± 11.88 | N.S |
| Adiponectin (ug/ml) | 22.85 ± 5.51 | 17.63 ± 4.90 | <0.05 |

Conclusion

- Vitamin D level is not influenced by obesity and it is negatively correlated with leptin regardless of weight.