Plasma adropin levels are associated with lipid characteristics amongst children with obesity

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Objective

This study is to evaluate the association among plasma adropin, leptin, lipopolysaccharide-binding protein (LBP) levels and lipid characteristics in children with obesity.

Methods

This was a cross-sectional study of children with obesity ranging from 5.5 to 12.5 years old, and age- and gender-matched children with normal weight were collected as control. Height, weight, waist circumference and hip circumference of all the participants were measured. The waist-to-hip ratios (WHR) were calculated. Plasma lipid characteristics including total cholesterol (TC), triglyceride (TG), high-density lipoprotein cholesterol (HDL-c) and low density lipoprotein cholesterol (LDL-c) were detected by standard methods, and plasma adropin, leptin and LBP levels were measured using the ELISA method.

Results

39 children (18 females and 21 males, 9.70±1.71 year-old) with obesity and 29 age- and gender- matched normal weight children (16 females and 13 males, 8.98±1.98 year-old) were collected. Compared with the control group, the TG levels of obesity group were significantly higher and the HDL-c levels were significantly lower (1.18±0.58 vs. 0.75±0.19 mmol/L, 1.43±0.29 vs. 1.77±0.32 mmol/L, respectively, both $p<0.05$). The plasma adropin levels of obesity group was significantly lower than control group (2.59±0.57 vs. 4.27±1.25 ng/ml, $p<0.05$), and the plasma leptin levels of obesity group was significantly higher than control group (2324.82±1467.40 vs. 491.65±344.10 pg/ml, 38.87±10.79 vs. 31.24±14.34 ng/ml, respectively, both $p<0.05$). Among the children with obesity, Pearson correlation analysis showed plasma adropin levels were negatively correlated with TC and LDL-c ($p<0.05$), plasma leptin levels were positively correlated with TC ($p<0.05$). There was no association between plasma adropin levels and leptin/LBP ($P>0.05$).

Conclusion

Children with obesity had lower plasma adropin and higher LBP levels, which were associated with lipid characteristics, suggesting adropin and LBP may be involved in lipid metabolism. The role of adropin in the development of obesity is still not clear, and further studies are needed especially for children.