Introductions

- Childhood obesity has become a major health concern in recent decades since it was known as an independent predictor of short-term and long-term metabolic and cardiovascular morbidities.
- Insulin resistance is common feature of childhood obesity and also a key therapeutic target for cardiovascular risk reduction.
- Fetuin-A, called α2-Heremans-Schmid glycoprotein (AHSG) in human, is a multipotent glycoprotein produced predominantly in liver.
- Previous preclinical and clinical researches have shown that Fetuin-A may act as an endogenous inhibitor of the insulin receptor tyrosine kinase, therefore, could be a surrogate index for insulin resistance.

Objectives

- In present study aimed to evaluate whether there were 1) differences in serum fetuin-A level in overweight and obese prepubertal children compared to normal-weighted prepubertal children and 2) relationships between fetuin-A levels and metabolic and cardiovascular risk factors.

Methods

- 99 prepubertal Korean children (59 males) with ages ranging from 6 to 10 years were included in this study.
- Subjects were analyzed after stratified into 2 groups: normal-weighted and overweight/obese groups.
- Serum fetuin-A levels were measured using an enzyme-linked immunosorbent assay.
- Insulin resistance was determined from basal fasting plasma glucose and insulin levels by the homeostasis model assessment for insulin resistance (HOMA-IR) and quantitative insulin sensitivity check index (QUICKI).
- HOMA-IR and QUICKI were calculated as follows:
  - HOMA-IR = [fasting insulin (µU/mL) × fasting glucose (mmol/L)]/22.5
  - QUICKI = 1/[log(fasting glucose (mg/dL)) + log(fasting insulin (µU/mL))]

Results

- Fetuin-A levels were significantly higher in overweight and obese prepubertal children than in normal-weighted children.
- Among baseline demographic and clinical parameters, Fetuin-A was associated with BMI SDS, blood pressure, TG, total cholesterol, LDL, and HDL.
- There were significant correlations between fetuin-A and insulin resistance indices (positively with HOMA-IR and negatively with QUICKI), and observed associations remained significant after correction for baseline covariates.
- The present study supported that fetuin-A could be regarded as an alternative marker for insulin resistance in children with prepuberty.

Conclusions

- None to declare