

Are Serum Spexin Levels Associated With Metabolic Syndrome Antecedents In Obese Adolescents?



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Objective:

Spexin is a novel peptide implicated in food intake and satiety. Spexin levels are reduced in obese patients.

Aim:

To evaluate the associations of metabolic syndrome (metS) antecedents with serum spexin levels in obese adolescents.

Setting:

A university- based tertiary care centre.

Patients and methods:

Eighty consecutive obese adolescents aged 10-18 y and 80 healthy peers were enrolled. Anthropometric measurements, pubertal examinations and clinical blood pressure measurements were performed using standard methods.

Fasting blood samples were drawn for glucose, insulin, lipids, uric acid, alanine aminotransferase (ALT) and spexin. Homeostasis-model assessment -insulin resistance (HOMA-IR) was calculated. Metabolic syndrome (metS) was diagnosed using International Diabetes Federation criteria. Associations of serum spexin with clinical and laboratory related variables were assessed. Significance was granted for a p level ≤ 0.05

Results:

Obese adolescents had lower serum spexin levels than healthy peers (50 pg/mL [25%-75% IQR: 25-98 pg/mL] and 67.0 pg/mL [25%-75% IQR:32.5-126.0 pg/mL; respectively], $p = 0.035$) (Figure 1). Twenty (25 %) obese adolescents were diagnosed as having metS. Obese adolescents with metS had lower spexin than those without metS (24.5 pg/mL [25%-75% IQR: 15.3-49.5 pg/mL] and 69.0 pg/mL [25%-75% IQR: 42.0-142.0 pg/mL]; respectively $p < 0.0001$).

The frequencies of hyperuricemia, IR and elevated ALT were similar in obese adolescents with metS and those without metS ($p > 0.05$ for all). Serum uric acid levels were correlated significantly with serum spexin after correcting for body mass index and HOMA-IR ($r = -0.41$, $p < 0.05$) (Figure 2).

Conclusions:

Obese adolescents have reduced spexin levels, and this reduction is more pronounced in those with MS. The MS antecedent that had the most significant association with reduced serum spexin was elevated uric acid

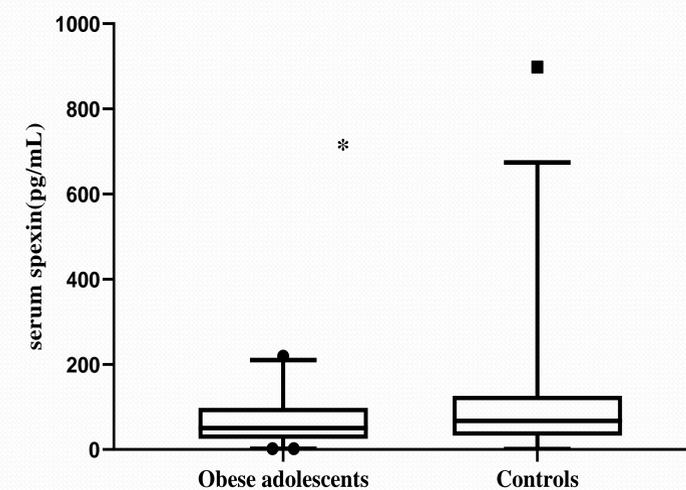


Figure 1. Serum spexin levels in obese adolescents (n=80) versus healthy controls (n=80). The whiskers represent the 2.5 and 97.5 percentile values. * $p = 0.035$

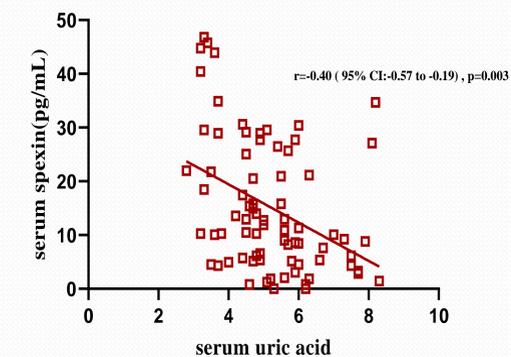


Figure 2. Correlation of serum uric acid levels with normalized serum spexin levels in obese adolescents (n=80)

| MS components | NCEP-ATPIII | IDF | |
|-----------------|--|---------------------------------|---|
| | | 10 < 16 years | ≥ 16 years |
| Obesity | WC >75th percentile for age and sex | WC ≥ 90 th percentile | Boy WC ≥ 90 cm Girl WC ≥ 80 cm |
| Fasting glucose | ≥ 110 mg/dl | ≥ 100 mg/dl | ≥ 100 mg/dl |
| TG | ≥ 100 mg/dl | ≥ 150 mg/dl | ≥ 150 mg/dl |
| HDL | 500 mg/dl, except boys from 15 to 18 years, whose cutoff point was <45 mg/dl | <40 mg/dl | Boy <40 mg/dl Girl <50 mg/dl |
| Blood pressure | SBP >90th percentile for age and sex | SBP ≥ 130 or DBP ≥ 85 | SBP ≥ 130 or DBP ≥ 85 |

SBP = Systolic blood pressure; DBP = diastolic blood pressure.

