Objective:

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

Aim:

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

Setting:

A university-based tertiary care center.

Patients and methods:

Eighty consecutive obese adolescents aged 10-18 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 serpin. Homeostasis-model assessment-insulin resistance (HOMA-IR) was calculated. Metabolic syndrome (metS) was diagnosed using International Diabetes Federation criteria. Associations of serum serpin with clinical and laboratory related variables were assessed. Significance was granted for a p level ≤ 0.05

Results:

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

Figure 1. Serum serpin 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 serpin levels in obese adolescents (n=80)