

Background and aim

- Galanin, a 29/30 amino acid peptide, is synthesized in several tissues including the central and peripheral nervous systems and is shown to be involved in the regulation of food intake and glucose homeostasis.
- It was demonstrated that increased galanin concentration stimulates food intake via activating galanin receptor 1 and increases the risk of obesity.
- To the best of our knowledge, no prior study has investigated relationship between the galanin levels and childhood obesity.
- We aimed to assess the relation of serum galanin levels with anthropometric and metabolic parameters in obese and healthy children.

Subjects and methods

- The current study consisted 38 obese children (mean age, 11.9 ± 3.0 years) with a current body mass index (BMI) greater than or equal to the 95th percentile, according to the Centers for Disease Control and Prevention (CDC-2000) and 30 age- and gender- matched healthy (mean age, 11.4 ± 2.0 years) with a BMI between the 3th and 85th percentile.
- Clinical and biochemical [glucose, insulin, homeostasis model assessment-insulin resistance (HOMA-IR), lipids, galanin, and leptin levels] parameters were analyzed.

Results

- ✓ The laboratory characteristics and correlation coefficients are shown in Table 1 and Table 2.
- ✓ There was no significant difference between the two groups in terms of age, gender, and pubertal status.
- ✓ Serum galanin and leptin levels were significantly higher in obese children.
- ✓ In obese children, galanin levels were positively correlated with fasting glucose ($r = 0.398$, $p = 0.013$), insulin ($r = 0.383$, $p = 0.018$), HOMA-IR ($r = 0.375$, $p = 0.020$), and triglyceride levels ($r = 0.391$, $p = 0.015$).
- ✓ Multivariate backward regression analysis in obese children revealed that galanin levels ($r^2 = 0.483$, $p < 0.001$) were significantly associated with fasting glucose (β -coefficient = 0.478, $p = 0.003$), insulin (β -coefficient = 2.319, $p = 0.001$), HOMA-IR (β -coefficient = -2.255, $p = 0.002$), and TG (β -coefficient = 0.382, $p = 0.005$), which explained 42.0 % of the variance

Table 1. The laboratory characteristics of obese and healthy children.

	Obese Children (n=38)	Healthy Control (n=30)	P
Glucose(mg/dL)	84.3±5.4	83.8±4.8	0.819 ^a
Insulin (µU/mL)	17.1 (10.9-23.6)	5.4 (3.4-10.4)	<0.001 ^b
HOMA-IR	3.4 (2.1-5.7)	1.1 (0.7-1.5)	<0.001 ^b
Triglyceride (mg/dL)	112.0 (96.8-165.0)	64.0 (53.0-86.5)	<0.001 ^b
Total cholesterol (mg/dL)	165.0 (151.7-193.5)	154.0 (138.8-163.3)	0.001 ^b
LDL-cholesterol (mg/dL)	97.5 (89.5-117.3)	87.0 (75.5-97.5)	0.002 ^b
HDL-cholesterol (mg/dL)	46.1±8.1	59.4 ±12.5	<0.001 ^a
Galanin (ng/mL)	1.12 (0.93-1.37)	0.98 (0.85-1.11)	0.010 ^b
Leptin (ng/mL)	10.1 (4.3-13.7)	1.2 (0.8-3.5)	<0.001 ^b

Table 2. Correlation coefficients between galanin levels and anthropometric and laboratory parameters

	Obese children (n=38)		Healthy children (n=30)	
	r	p	r	p
BMI SDS	0.103	0.537	0.115	0.545
Fat mass (kg)	0.138	0.339	-0.004	0.981
Percent of body fat (%)	0.191	0.318	-0.153	0.345
Glucose (mg/dL)	0.398	0.013	0.088	0.644
Insulin (µU/mL)	0.383	0.018	-0.110	0.564
HOMA-IR	0.375	0.020	-0.024	0.901
Triglyceride (mg/dL)	0.391	0.015	-0.074	0.699
Total cholesterol (mg/dL)	0.218	0.183	0.068	0.690
LDL- cholesterol (mg/dL)	0.229	0.166	-0.045	0.812
HDL-cholesterol (mg/dL)	0.025	0.879	0.243	0.196
Leptin (ng/mL)	-0.061	0.715	-0.182	0.335

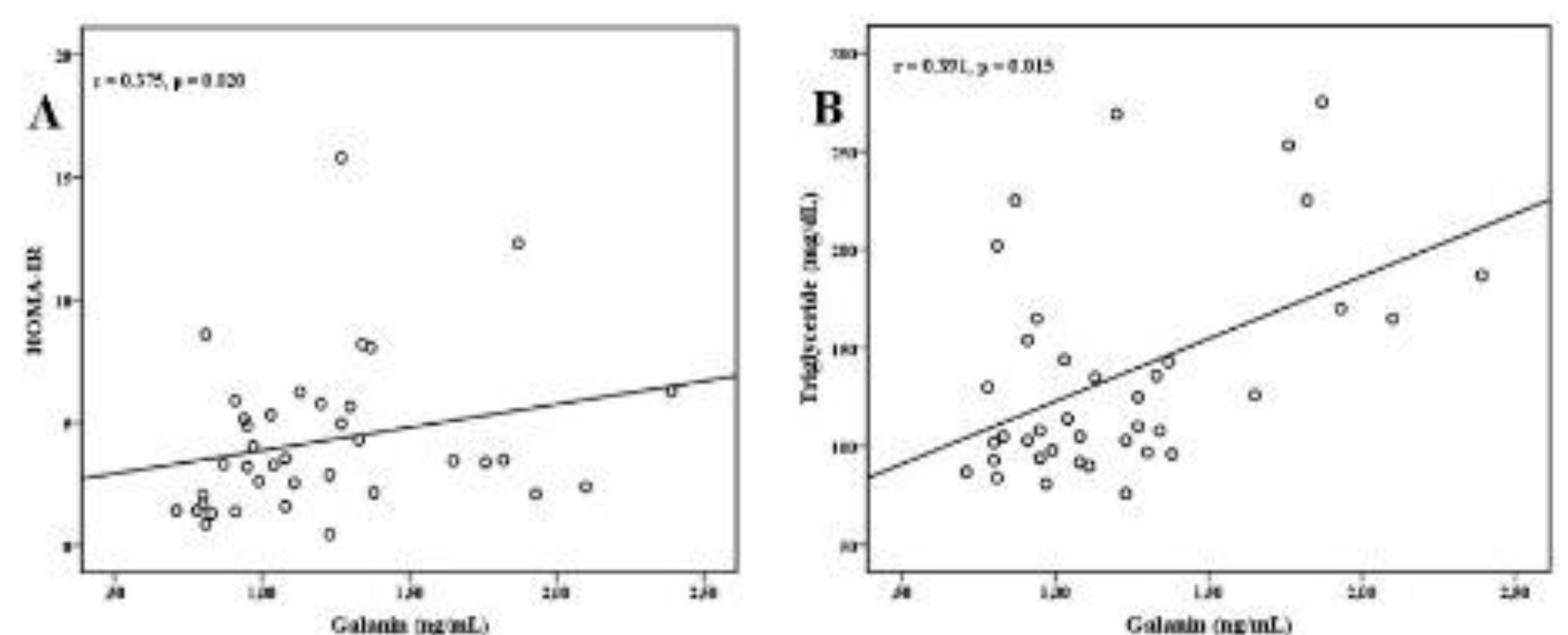


Figure 1: The positive correlations of galanin levels with HOMA-IR (A) and triglyceride (B) in obese children

Conclusions

- Galanin may have a negative effect on glucose homeostasis and lipid metabolism in childhood obesity.
- In obese children, serum galanin levels were significantly higher and were positively correlated with insulin resistance and triglycerides.