

Adiponectin and leptin in children with type 1 diabetes for 3-5 years with or without residual β cell function

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The authors have nothing to declare



BACKGROUND

Studies in adults with type 1 diabetes (T1D) have indicated that adiponectin is negatively associated and leptin positively associated with measures of a residual β cell function (RBF). Studies have also shown higher adiponectin levels in T1D patients compared with T2D patients, while leptin levels were lower in T1D patients compared with T2D patients.

OBJECTIVE

To compare serum adiponectin and leptin levels and their ratio in children with T1D for 3-5 years with and without RBF and in healthy children.

MATERIAL

Table 1

Characteristics	Type 1 diabetes	Healthy controls
Number (female)	342 (173)	70(40)
Age*	13.6 (10.8-15.7)	12.1 (10.4-13.1)
Age at diagnose*	9.2 (6.3-11.5)	
Diabetes duration*	4.2 (3.7-5.0)	
HbA1c %	8.3 +/-0.07	
HbA1c mmol / mol	67.5 +/-0.8	
Prepubertal (RBF+)	136 (15)	40
Pubertal (RBF+)	206 (42)	30

Characteristics of the study population. * Median and interquartile range.

METHODS

Residual β cell function (RBF) was evaluated by meal-stimulated C-peptide. A significant RBF was defined as a RBF of more than 100 pmol / L (RBF+). Leptin and adiponectin were assayed using in-house assays based on commercial reagents from R&D Systems. We performed multiple linear regression analyses to test for differences in adiponectin, leptin and leptin/adiponectin ratio between patients (+RBF/-RBF) and healthy controls, adjusting for age, gender, BMI-SDS and HbA1c, stratified by pubertal status.

RESULTS

In prepubertal children leptin and the leptin/adiponectin ratio were higher in RBF+ patients compared with RBF- patients and healthy controls ($P < 0.04$) (Figure 1). In pubertal children adiponectin was higher in RBF- patients compared with healthy controls ($P < 0.05^*$) (Figure 2).

CONCLUSION

1. The highest leptin levels were observed in children with residual β cell function, whereas the highest adiponectin levels were found in children without residual beta cell function. The same leptin and adiponectin pattern have been shown in children with T2D and T1D, respectively.
2. The question remains whether children with T1D and a significant beta cell function after 3-5 years diabetes share phenotypic similarities with T2D patients.

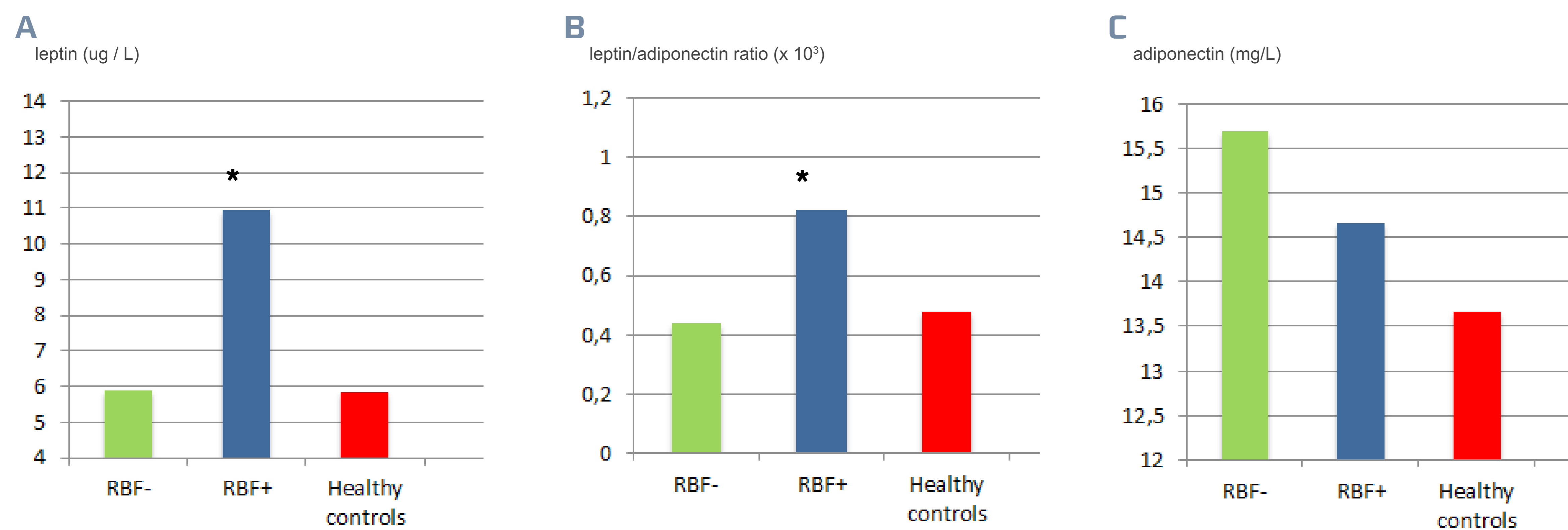


Figure 1. Leptin (A), leptin/adiponectin ratio (B) and adiponectin (C) in prepubertal children without and with residual β cell function (RBF- and RBF+) and healthy controls. * RBF+ compared to RBF- and healthy controls $P < 0.04$.

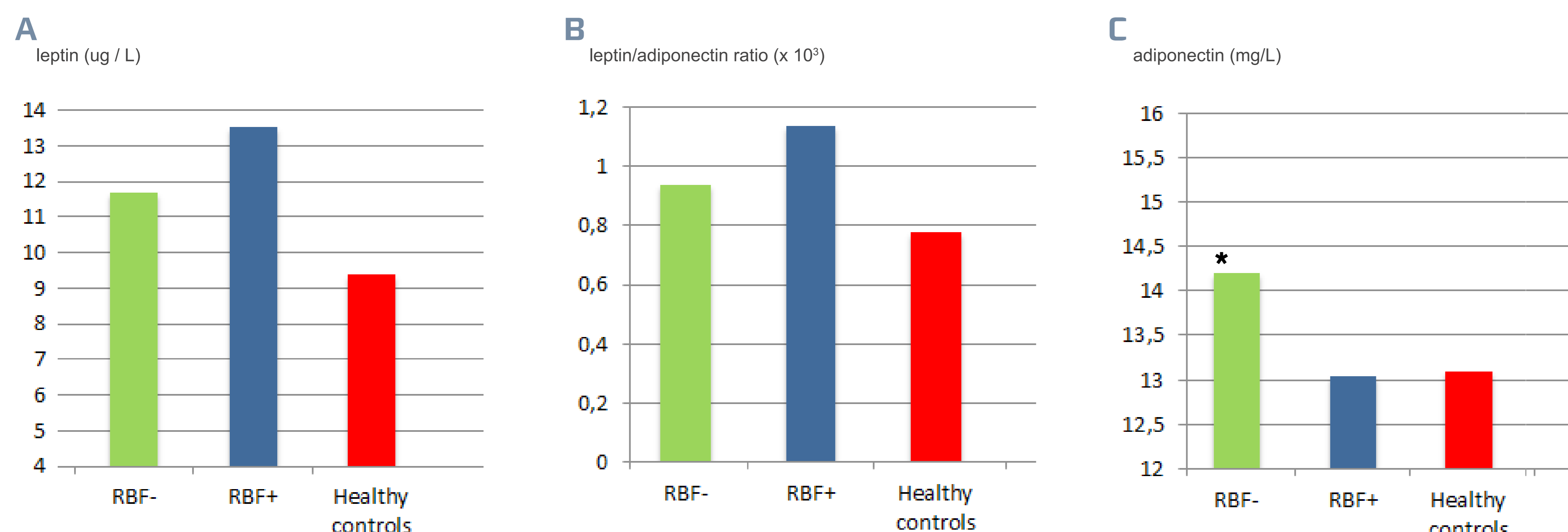


Figure 2. Leptin (A), leptin/adiponectin ratio (B) and adiponectin (C) in pubertal children without and with residual β cell function (RBF- and RBF+) and healthy controls. * RBF- compared to healthy controls $P < 0.05$.

