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## Introduction

Increased adiposity and insulin resistance are conditions frequently observed nowadays. Many hormones are involved in the pathogenesis of the condition but therapeutic options we can offer to the patients are still scant. Each newly discovered peptide give us hope- Adropin (Ad) is a newly discovered metabolic hormone involved in energy homeostasis. This homeostasis is frequently disturbed in patient with Turner Syndrome (TS). Patients with Turner syndrome are unique model for studies of an effect of the treatment with supraphysiological doses of growth hormone (GH)

Objective and hypotheses: We studied adropin dependence and response in a group of TS patients treated with supraphysiological doses of growth hormone (rGH)

## Study group and rGH treatment

The study group consisted of 36 patients with Turner syndrome (TS) diagnosed in one pediatric tertiary center. Their median age was 7,06 years (range 3.2–16.07 years). The patients were diagnosed by karyotyping. Conventional G-banding and fluorescence *in situ* hybridization on peripheral blood cultures confirmed numerical or structural abnormalities of X chromosome or mosaicism. X chromosome monosomy was established in 19 patients (52,8%).

Because of short stature the patients were treated with rGH given subcutaneously once daily at bedtime, in a dose 0,05 mg/kg/day. The dose of rGH was adjusted to body weight every 3 months.

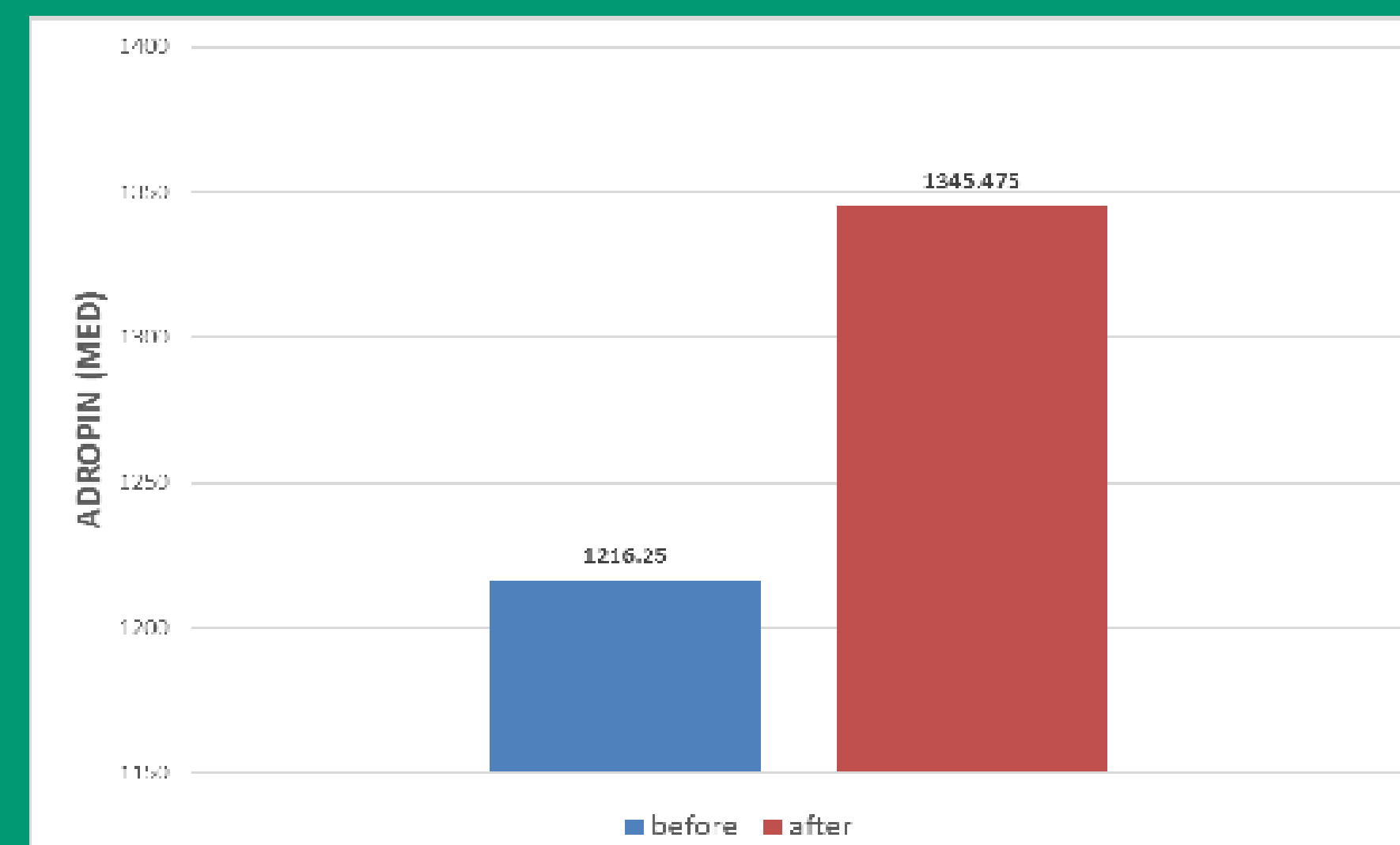
The mean treatment period was 1.5 yr (range 0.4-4.0yr). No other medication including estrogen replacement therapy was conducted during the study. Patients with coexisting endocrine diseases or other conditions interfering with glucose metabolism were excluded

## Measurements

Prior to and following the rGH treatment anthropometrical data were recorded as well as biochemical parameters were measured: Ad, OGTT, insulin, lipids, IGF-1, and IGFBP-3.

## The description of TS group and the effect of rGH therapy

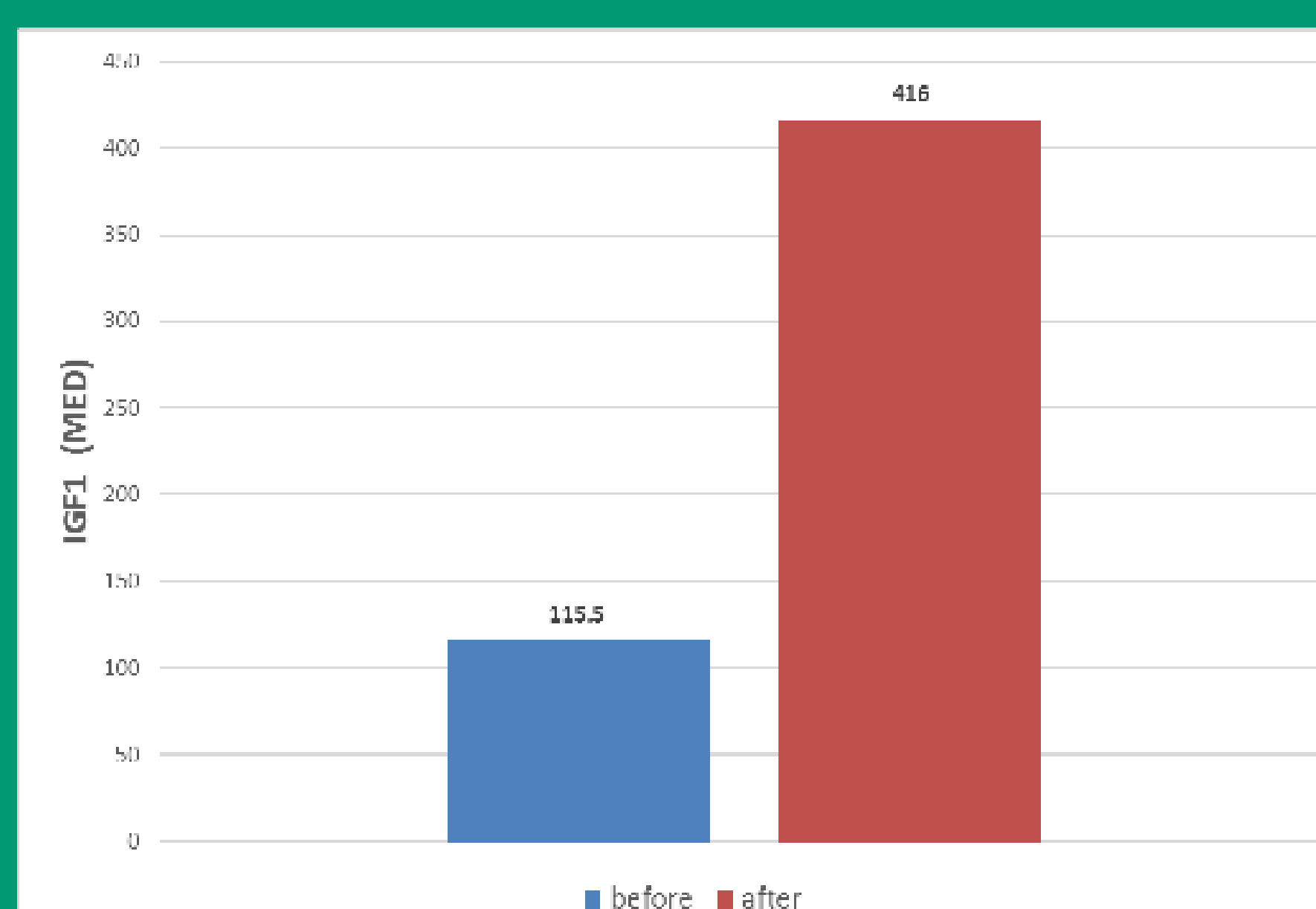
	before rGH	after rGH
Height [cm]	112.14 ± 16.3	126.14 ± 15.29
Height SDS	-2.45 ± 0.91	-1.8 ± 0.83
BMI SDS	0.18 ± 1.27	0.34 ± 1.1
Fasting plasma glucose [mg/dl]	87.77 ± 9.13	86.69 ± 15.26
Fasting plasma insulin [uIU/ml]	3.67 ± 2.3	8.38 ± 10.79
IGF-1 [ng/ml]	119.40 ± 62.47	439.08 ± 209.91
IGF-1 SDS	-1.70 ± 0.48	0.41 ± 1.29
IGFBP3 [ug/ml]	3.94 ± 0.83	5.73 ± 1.2



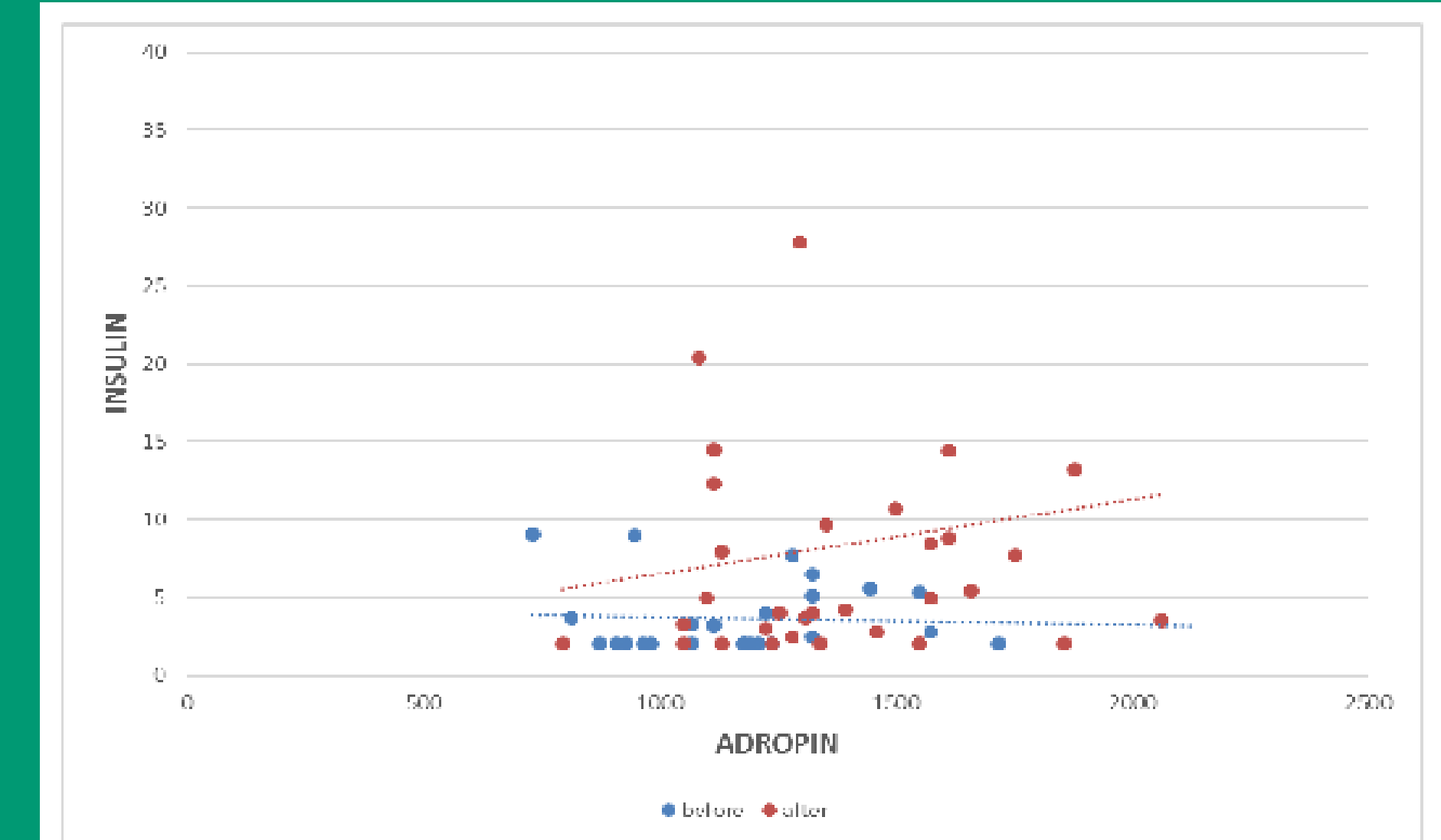
Adropin concentration increased significantly on rGHt



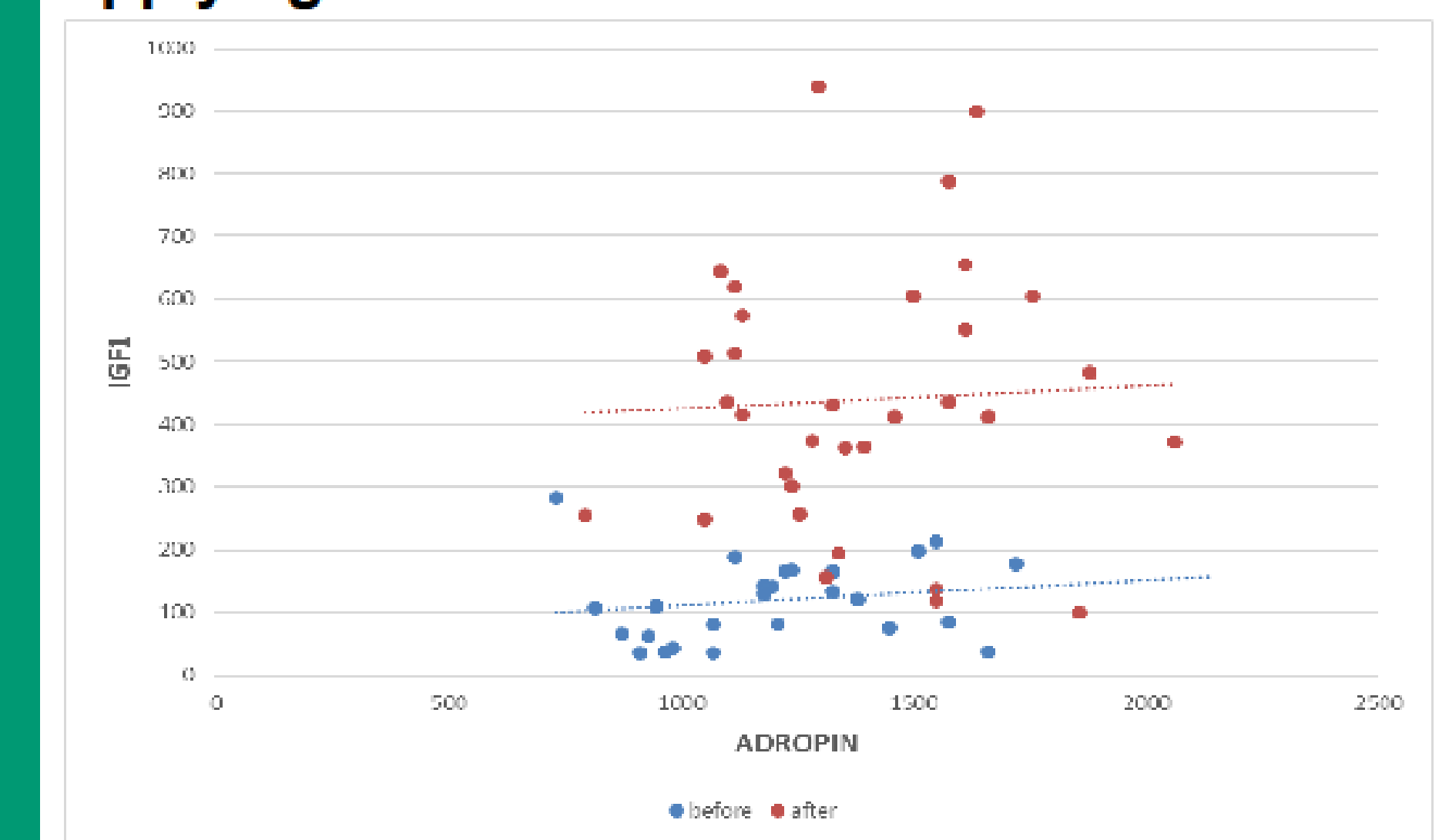
We observed the increase of HOMA-IR concentration on rGHt



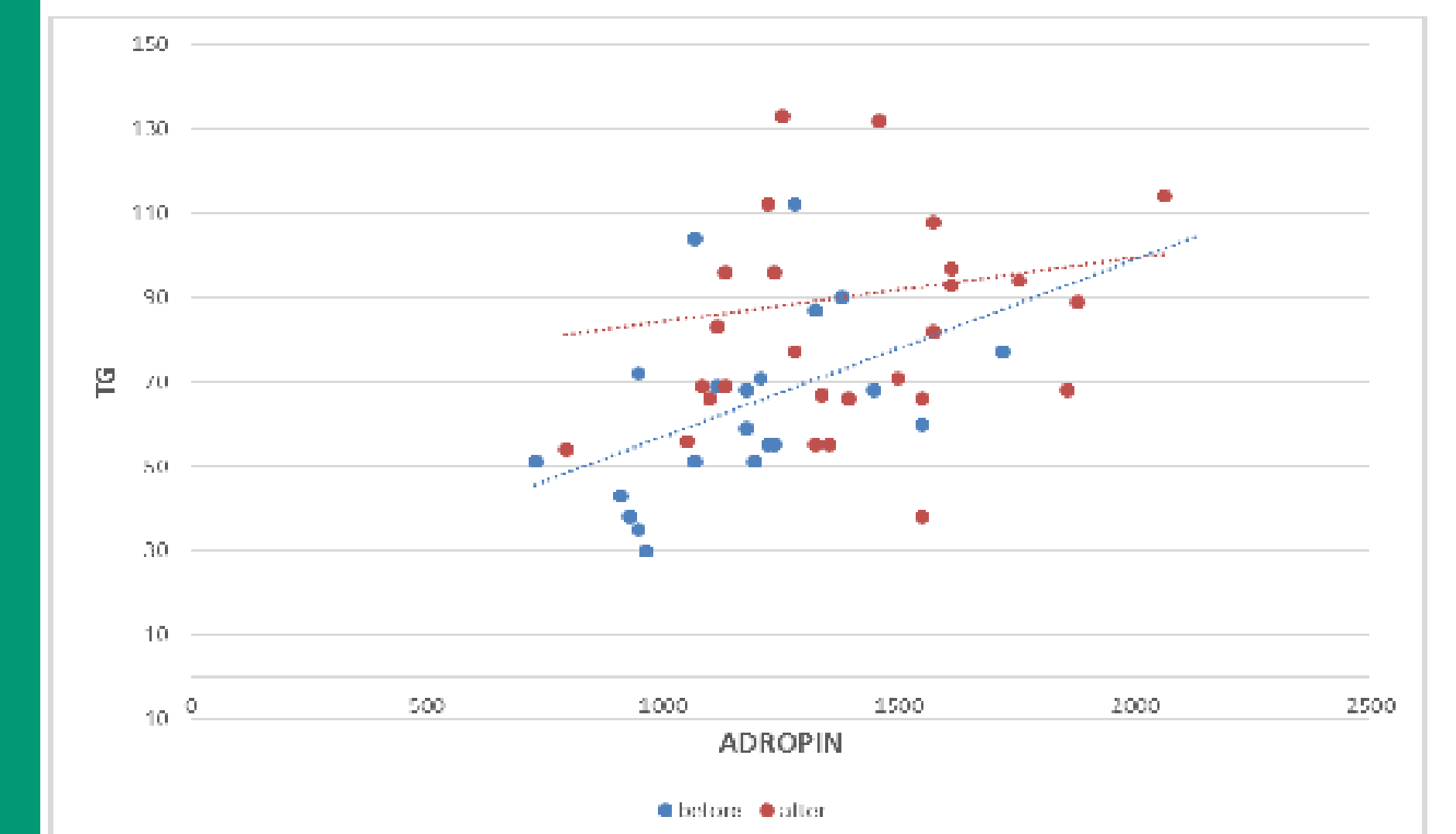
The increase of IGF-1 concentration at the end of observation was significant



Ad correlated with insulin level before GH applying



The correlation between adropin and IGF-1 and IGF-1 SDS levels was not significant neither before nor on the treatment



The only correlation noticed in GH treated patients was between Ad adropin and TG

## Conclusions

Result of the study showed an increase in adropin level following rGH application.

This effect is not mediated by IGF-1

rGH treatment changes adropin influence on lipid metabolism, but ameliorates insulin action.

To the best of our knowledge this is the first study on Adropin in Turner Syndrome patients.