



The effects of pituitary replacement therapies on body composition in adult patients with growth hormone deficiency.

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Background

GH Deficiency (GHD) has been clearly associated with adverse metabolic profiles (e.g. glycemic impairment, low HDL-cholesterol, high triglycerides and LDL-cholesterol) as well as osteoporosis with high risk of pathological fractures, reduced life expectancy and poor quality of life.

In this clinical setting, characterized by altered body composition and adverse cardiovascular risk, the effects of other pituitary hormone deficiencies or their replacement therapies on the metabolic profile are still a matter of debate.

In fact, it is well known that excess of hydrocortisone acts increasing fat mass and reducing lean tissues. On the other hand, high dosages of L-T4 may reduce total body fat mass inducing its catabolism.

Aim

Purpose of our study was to evaluate the effects of replacement therapies of central hypoadrenalism and hypothyroidism on body composition in a cohort of 33 patients (F 7, M 26) with treated and untreated GHD.

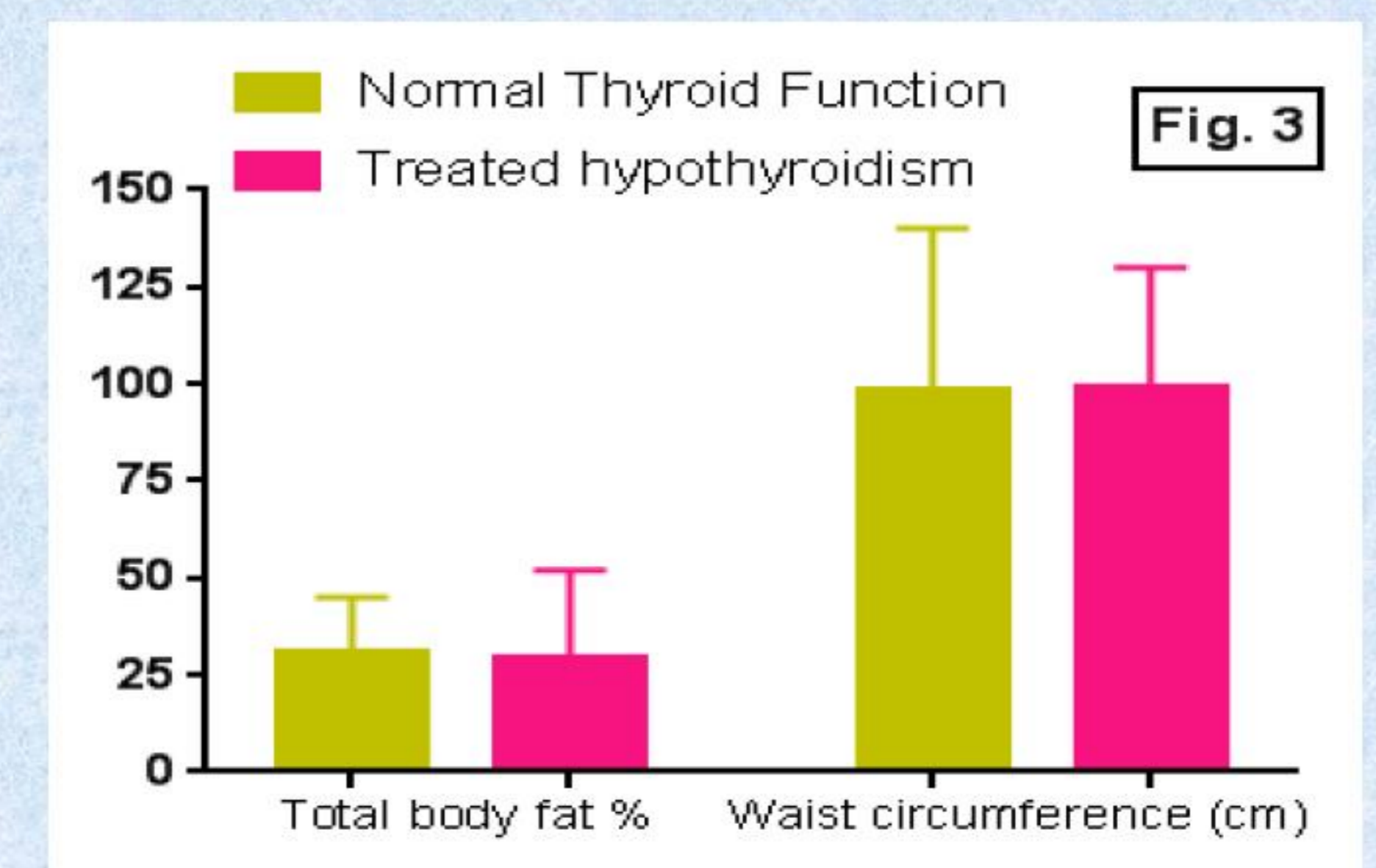
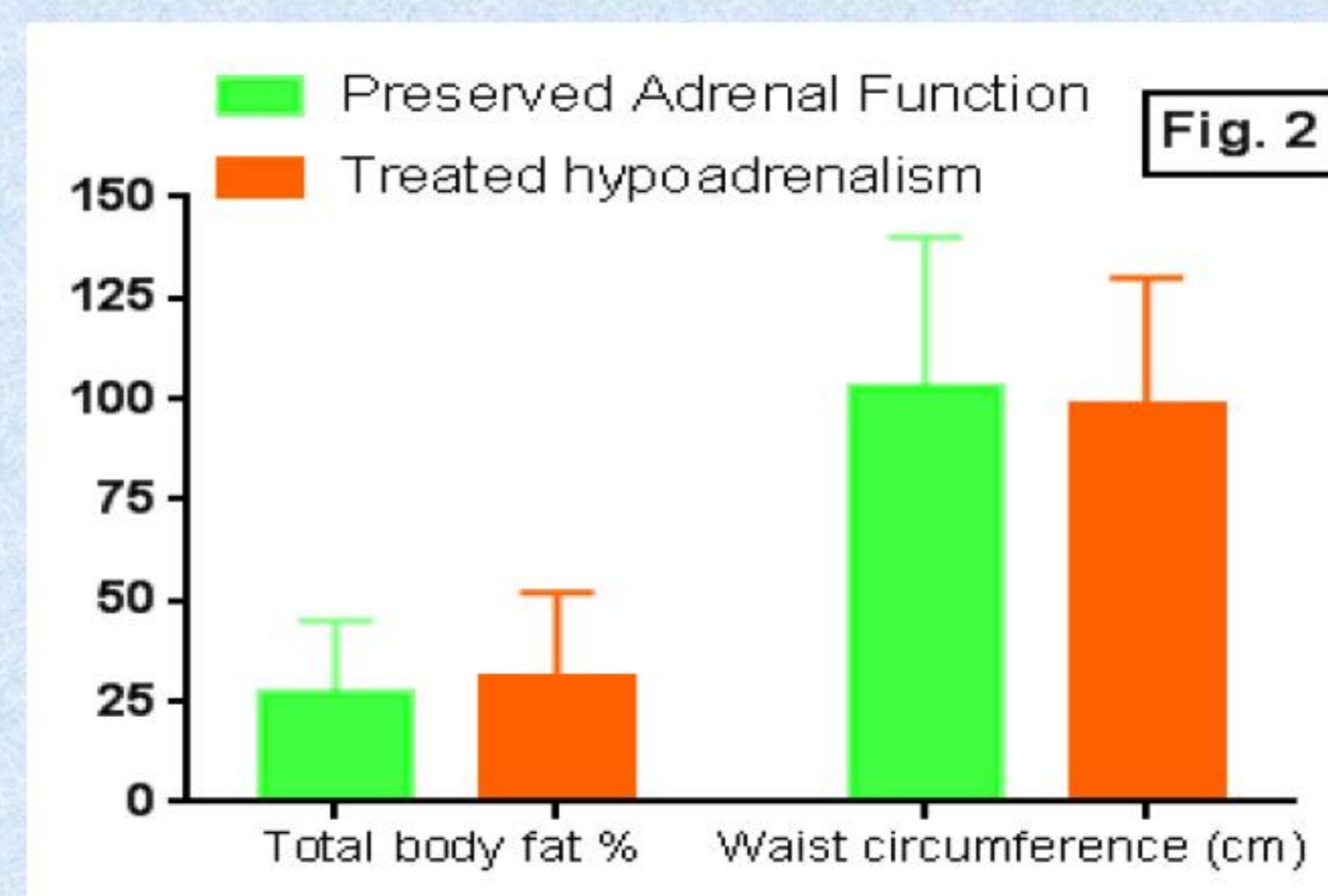
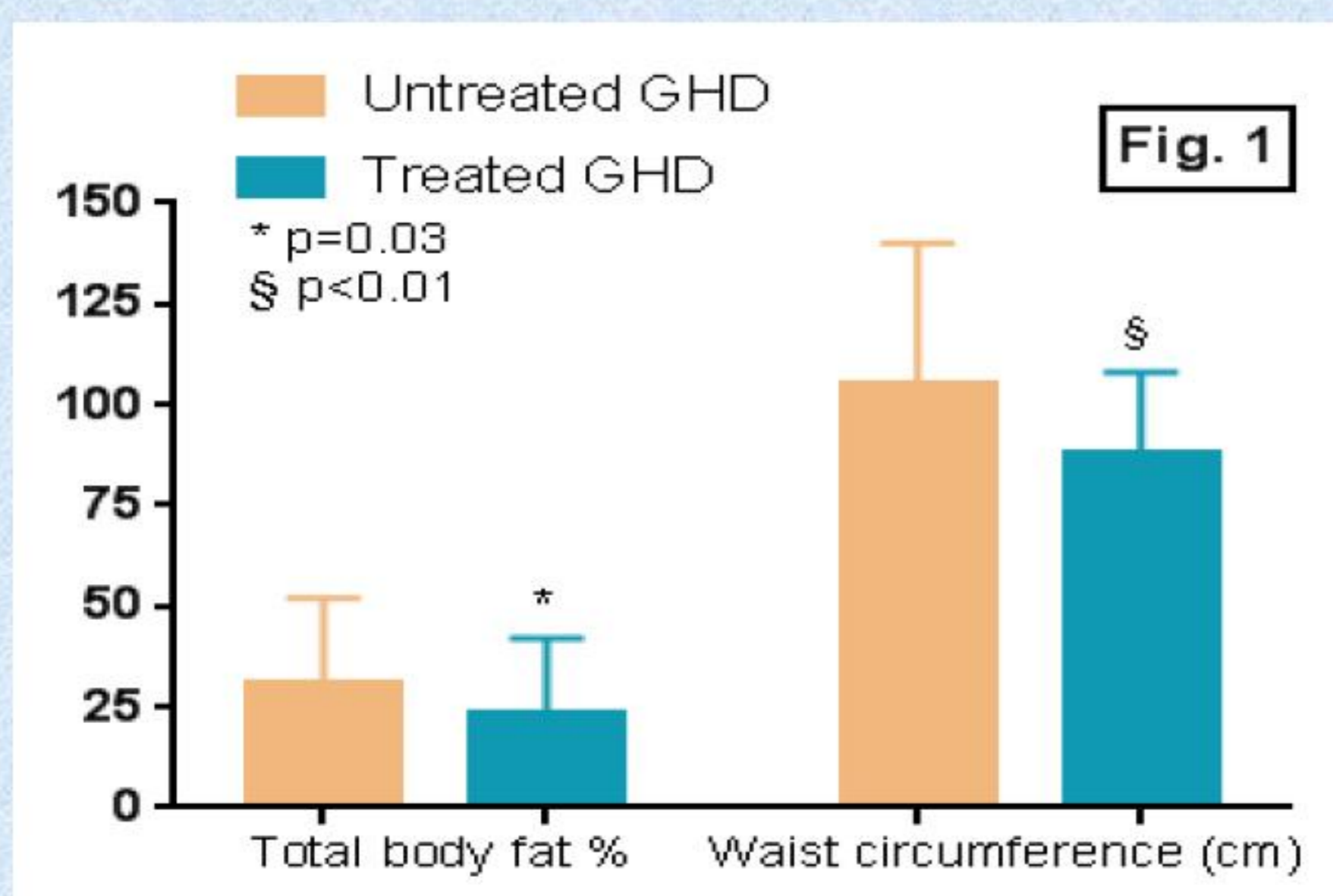
Patients & Methods

	Patients
SEX (M vs F)	26 vs 7
Median age (years)	51 (18-77)
Patients treated for GHD	10
Patients treated for hypothyroidism	25
L-T4 median daily dose pro Kg	1.27 (0.4-2.6) mcg/Kg/day
Patients treated for glucocorticoid deficiency	22
Hydrocortisone median daily dose	25 (10-40) mg/die

Patients were evaluated for their anthropometric measures and body composition by Hologic Discovery DXA machine.

Results

- ✓ Subjects with untreated GHD showed higher total body fat percentage (30.9% range: 22-52 vs. 23.0%, range: 11-42; $p=0.03$) and waist circumference (105 cm vs. 88cm; $p=0.009$) (Fig. 1) as compared to patients with treated GHD.
- ✓ However, no significant differences in body composition were observed between patients with treated hypoadrenalism and those with preserved adrenal function (total body fat percentage: 30.6%, range 11-52 vs. 26.8, range 13-45; $p=0.48$; waist circumference: 98.5 cm, range 75-130 vs. 103.0 cm, range: 75-140; $p=0.98$) (Fig. 2).
- ✓ No significant differences were observed between patients treated with L-T4 and those with normal thyroid function (total body fat percentage: 29.6%, range 11-52 vs. 30.4, range 13-45; $p=0.82$; waist circumference: 99.0 cm, range 75-130 vs. 98.0 cm, range: 75-140; $p=0.91$) (Fig. 3).
- ✓ Moreover, daily dose of hydrocortisone did not correlate with total body fat percentage ($\rho: 0.01$; $p=0.9$) and waist circumference ($\rho: 0.29$; $p=0.27$).
- ✓ Likewise, no significant associations were found between L-T4 daily dose and total body fat percentage ($\rho: 0.17$; $p=0.4$) and waist circumference ($\rho: 0.25$; $p=0.30$) in patients with central hypothyroidism.



Conclusions

- ✓ This study suggests that GHD is the main determinant of body composition in adult hypopituitary patients.
- ✓ In fact, replacement therapies with hydrocortisone and L-T4 (when prescribed in appropriate doses) do not seem to exert relevant effects on this clinical outcome in this setting.