HYPOTHYROIDISM AND BODY WEIGHT: LONG-TERM CHANGES DURING REPLACEMENT THERAPY

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Introduction

- There is a general thought that hypothyroidism is a cause for obesity and that replacement therapy leads to a normalisation of body weight.
- The aim is to study body weight in patients with primary hypothyroidism of autoimmune aetiology before and after replacement therapy .

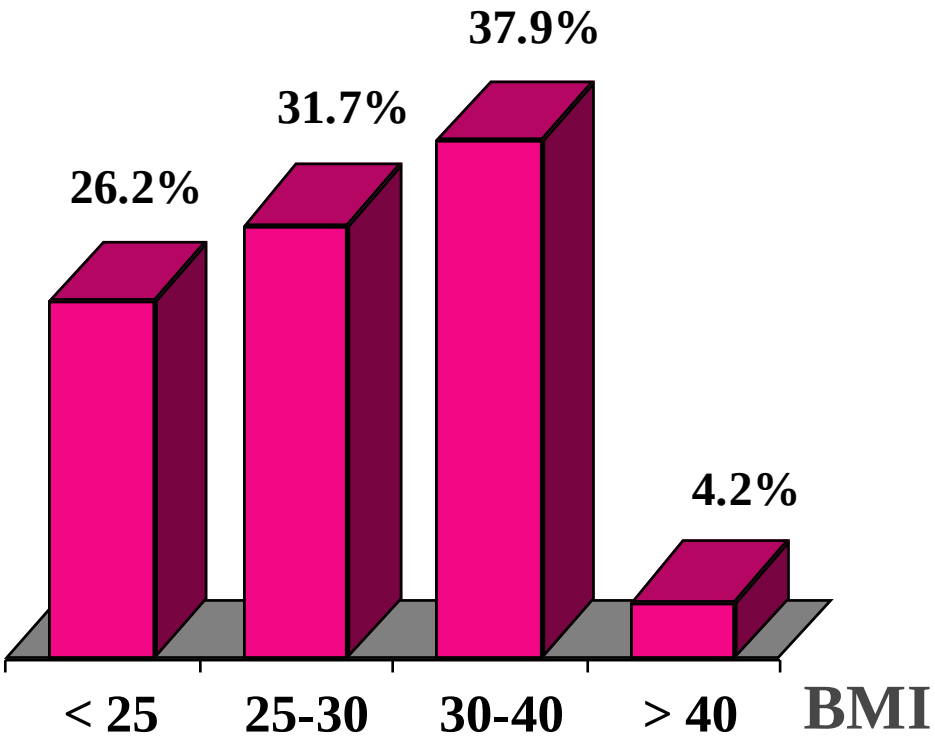
Subjects

- 129 females and 16 males
- Age: 50.5±15.1 years (mean±SD)
- Initial TSH level >10 mU/ml.

Results (Before replacement therapy)

- Body Weight= 73.9±14.7 kgr
- BMI= 29.3± 5.7 kgr/m^2

TSH= 47.6±32.3 mU/ml,T4= 4.06±2.44 µg/dl, T3= 85.8±39.4 ng/dl.



There was no correlation between BMI and thyroid hormones.

- **T4: r= -0.060, p= 0.470**
- **T3: r= 0.019, p= 0.822**
- **TSH: r= 0.059, p= 0.477**

73.8% are overweight or obese

Results (6 months after replacement therapy)

Dose 125.7±28 μg L-Thyroxine

- **BW= 71.3±13.1**
- **BMI= 28.5±4.7**

T4= 10.3±2.8, T3= 137.7±34.2, TSH= 1.6±2.8

Body Weight decreased by 1.55±4.0 kg (p=0.001)

and

BMI by 0.626±1.629 (p=0.001)

Results (18 months after replacement therapy)

Dose 125.4±29 μg L-Thyroxine

- **BW= 71.2±13.8**
- **BMI= 28.4± 5.4**

T4= 10.2±2.3, T3= 128±27.2, TSH= 0.8±1.1

Body Weight decreased by 0.57± 5.1 kgr (p= 0.408)

and

BMI by 0.262 ± 2.035 (p= 0.344)

Multiple regression analysis

Body weight changes after 6 months

DEP VAR:change of BW N:86 MULTIPLE R:0.636 SQUARED MULTIPLE R:0.405

ADJUSTED SQUARED MULTIPLE R: 0.367 STANDARD ERROR OF ESTIMATE: 3.251

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	-6.450	2.863	0.000	.	-2.253	0.027
Weight	0.070	0.027	0.236	0.890	2.576	0.012
Age	0.084	0.026	0.304	0.874	3.290	0.001
T4-0	-0.633	0.147	-0.377	0.965	-4.294	0.000
T4-6	0.475	0.138	0.326	0.826	3.433	0.001
T3-6	-0.028	0.011	-0.233	0.862	-2.503	0.014

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	574.698	5	114.940	10.875	0.000
RESIDUAL	845.552	80	10.569		

Multiple regression analysis

Body weight changes after 18 months

DEP VAR:Change BW N:55 MULTIPLE R: 0.650 SQUARED MULTIPLE R:0.422

ADJUSTED SQUARED MULTIPLE R: 0.400 STANDARD ERROR OF ESTIMATE: 3.930

VARIABLE	COEFFICIENT	STD ERROR	STD COEF	TOLERANCE	T	P(2 TAIL)
CONSTANT	-5.368	2.364	0.000	.	-2.270	0.027
Age	0.174	0.040	0.472	0.967	4.403	0.000
T4-0	-0.795	0.230	-0.370	0.967	-3.450	0.001

ANALYSIS OF VARIANCE

SOURCE	SUM-OF-SQUARES	DF	MEAN-SQUARE	F-RATIO	P
REGRESSION	587.605	2	293.803	19.021	0.000
RESIDUAL	803.223	52	15.447		

Conclusions

- Patients with primary hypothyroidism are heavier than general population but the degree of hypothyroidism is not related to Body Weight.
- The mean weight loss after 6 and 18 months on replacement therapy is negligible (ΔBMI=0.26) and only in elderly patients with profound hypothyroidism and higher initial Body Weight a slight improvement of degree of obesity can be achieved (ΔBMI= 1.81).