



EVALUATION OF BONE AND MINERAL METABOLISM IN PATIENTS WITH THE SYNDROME OF RESISTANCE TO THYROID HORMONE

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INTRODUCTION

Resistance to Thyroid Hormone (RTH) is a rare disease, characterized by elevated thyroid hormone and not suppressed TSH concentrations. In 85% of cases is related to TR β gene mutations.

OBJECTIVES

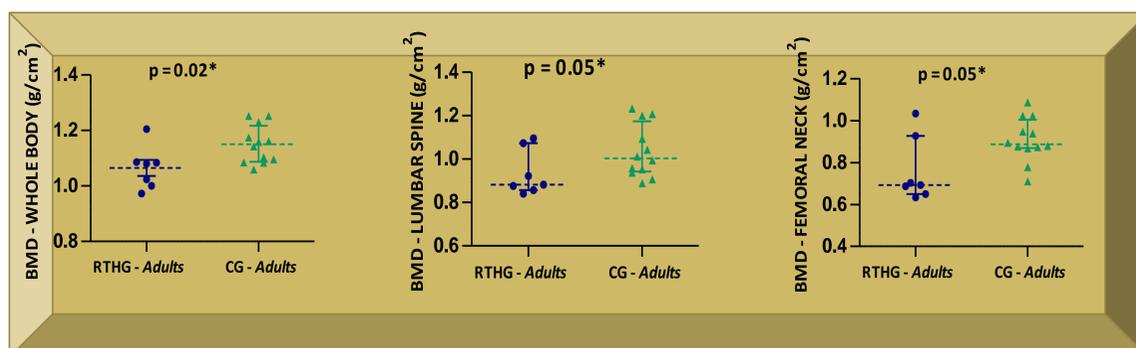
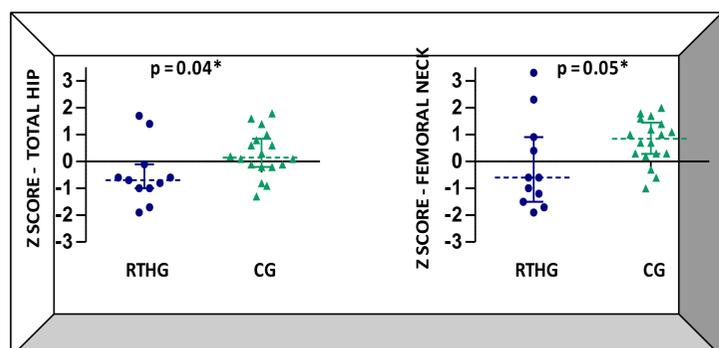
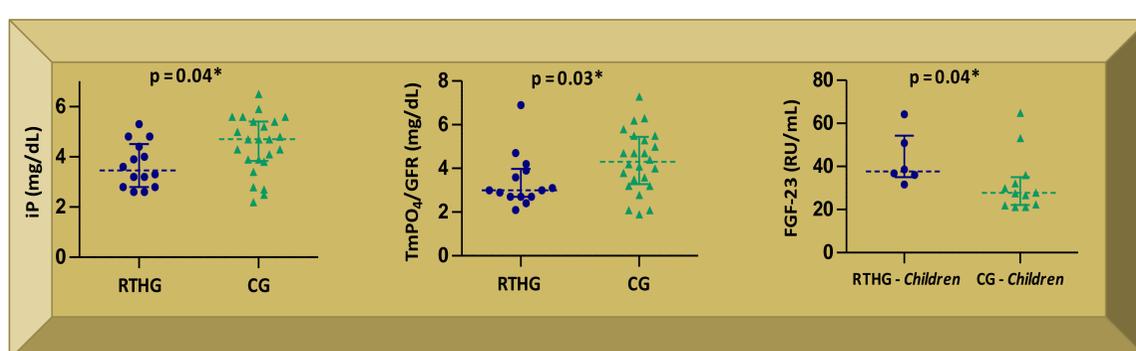
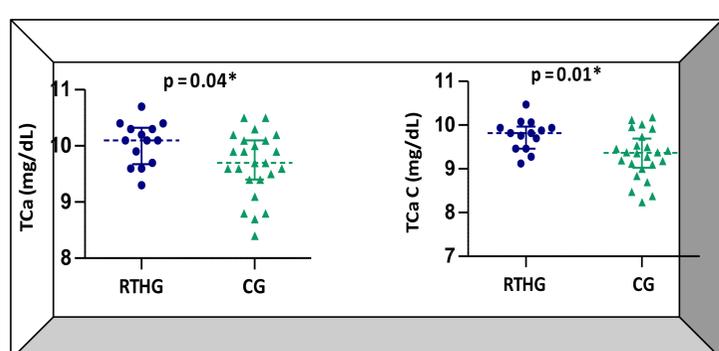
To evaluate biochemical and densitometric features of 14 patients with RTH [RTHG: 7 females (4 children) and 7 males (2 children)] in comparison to 24 control subjects [CG, 14 females (8 children) and 10 males (4 children)].

METHODS

Serum levels of total calcium (TCa), albumin, inorganic phosphorus (iP), creatinine, alkaline phosphatase, osteocalcin, PTH, 25-hydroxyvitaminD, fibroblast growth factor-23 (FGF-23) and cross-linked C-telopeptide and urinary measurement of calcium, phosphorus, and creatinine were measured. Renal threshold phosphate concentration (TmP/GFR) was estimated. Bone densitometry with focus on whole body, lumbar spine, total hip, femoral neck and forearm was obtained. Nonparametric tests were applied.

RESULTS

The RTH patients exhibited higher concentrations of TCa ($p=0.04$) and corrected serum levels of calcium for albumin concentrations (CG= 9.3 ± 0.5 ; RTHG= 9.8 ± 0.4 mg/dl; $p=0.01$), lower concentrations of iP (CG= 4.5 ± 1.2 ; RTHG= 3.7 ± 0.9 ; $p=0.04$) and lower TmP/GFR (CG= 4.3 ± 1.4 ; RTHG= 3.4 ± 1.2 ; $p=0.03$) than the CG. The FGF-23 concentrations were higher in children with RTH than in CG (CG= 32.2 ± 13.6 ; RTHG= 43.1 ± 12.2 ; $p=0.04$). The bone mass was lower among adults in RTHG, in whole body (CG= 1.15 ± 0.07 ; RTHG= 1.07 ± 0.08 ; $p=0.02$), lumbar spine (CG= 1.04 ± 0.12 ; RTHG= 0.94 ± 0.11 ; $p=0.05$), and femoral neck (CG= 0.91 ± 0.11 ; RTHG= 0.76 ± 0.16 ; $p=0.05$) than in the correspondent CG. The Z-scores were lower in the RTHG than in CG in total hip ($p=0.04$) and femoral neck ($p=0.05$).



CONCLUSIONS

These data indicates alterations on bone mineral metabolism in RTHG. The higher concentrations of calcium and lower bone mass in RTHG than in CG associated with the results of studies using animal models with mutant mice, suggest that RTHG may exhibit thyrotoxic bone phenotype. However, it was not possible to point out a single pathophysiological mechanism that justifies simultaneously all changes observed.