# BODY COMPOSITION IN GH DEFICIENT CHILDREN: EFFECTS OF GH THERAPY AND COMPARISON BETWEEN DXA AND ANTHROPOMETRIC DATA.

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## BACKGROUND

GH deficiency (GHD) in adults has been consistently associated with increased adiposity and decreased lean mass. Data in childhood are still scanty and the most appropriate tools to assess body composition in these children remain to be established.

## OBJECTIVE

The aim of this study was to evaluate the effects of GHD and GH replacement therapy (GHRT) on body composition in GHD children and make a comparison between DXA and anthropometric measures in evaluating adiposity in these patients.

## METHODS

Twenty prepubertal children (10.36±3.58 years) with GHD were evaluated before and after 2 years of GHRT. Patients underwent measurement of height, weight, BMI, waist circumference (WC), hip circumference, waist to hip (WHR) and waist to height ratio (WHtR). DXA analysis was performed to evaluate fat mass percentage (FM%) and lean mass percentage (LM%).
Anthropometric measures were also evaluated in twenty healthy children, comparable for age, sex and height with the patients.

## RESULTS

At baseline WHtR was significantly higher in GHD children (0.49±0.05vs0.44±0.03, p<0.01), whereas no differences were found in BMI, WC, hip circumference and WHR (Table, Figure 1).

GHRT was associated with a significant reduction in WHtR (0.45±0.03, p<0.01) (Figure 1). Furthermore, GHRT was associated with a reduction in FM% (27.57±7.46%vs22.15±6.49, p<0.0001) and an increase in LM% (68.62±7.13vs74.62±6.55, p<0.0001) (Figure 2).

Correlation studies revealed that WHtR significantly correlated with FM% and LM% evaluated by DXA at study entry (r=0.61, p<0.01; r=-0.60, p<0.001, respectively) and after GHRT (r=0.61, p<0.05; r=-0.58, p<0.05, respectively), whereas no correlations were found between DXA measurements and other parametric indices (Figure 3).

Table – Anthropometric measures in GHD children and controls at baseline

| | GHD children | Controls | p |
|---|---|---|---|
| BMI (SDS) | -0.79±1.16 | -1.11±0.93 | ns |
| WC (cm) | 61.80±11.29 | 58.33±6.33 | ns |
| Hip Circumference (cm) | 64.01±11.87 | 61.77±6.51 | ns |
| WHtR | 0.49±0.05 | 0.44±0.03 | p<0.01 |
| WHR | 0.96±0.04 | 0.94±0.03 | ns |

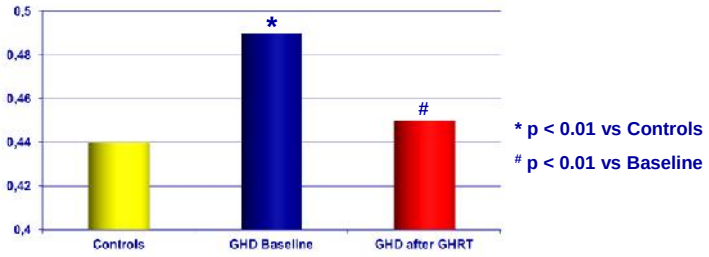


Figure 1 – WHtR in GHD children and controls

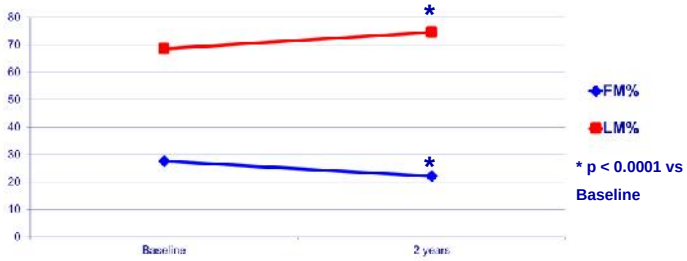


Figure 2 – FM% and LM% in GHD children

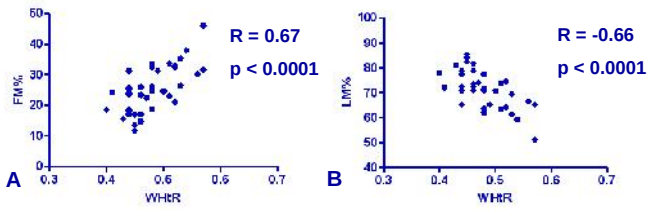


Figure 3 – Correlation between WHtR and FM% (A) and LM% (B)

## CONCLUSION

Untreated GHD in children is associated with increased abdominal adiposity in comparison to healthy, matched controls. GHRT improves body composition increasing lean mass and decreasing fat mass.
In our study the evaluation of WHtR yielded to results comparable to DXA measurements thus leading to conclude that WHtR may represent a simple clinical tool which accurately reflects fat distribution.