

# VITAMIN D IN SHORT CHILDREN ON GROWTH HORMONE THERAPY: EFFECTS OF VITAMIN D STATUS AND VITAMIN D SUPPLEMENTATION ON GLUCOSE HOMEOSTASIS

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## Introduction

Glucose metabolism effects of vitamin D deficiency are debated. Growth hormone therapy is associated with increased insulin values and decreased insulin sensitivity.

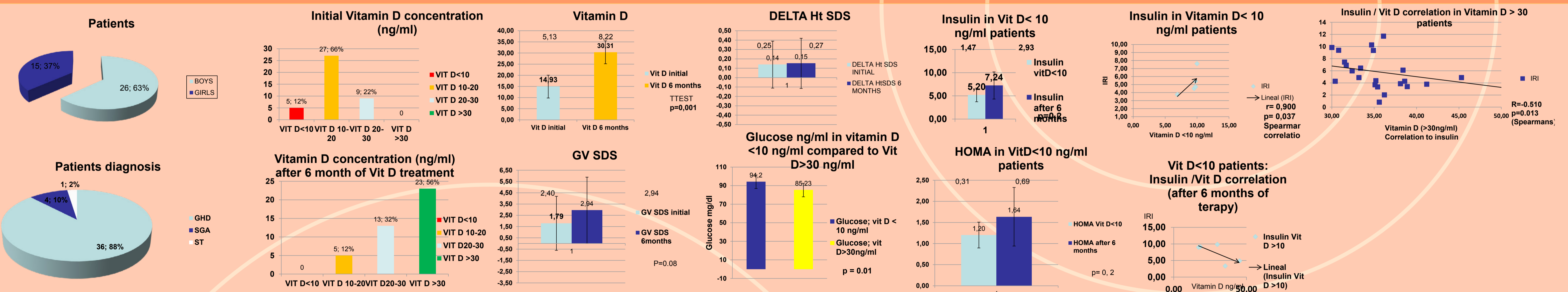
## Objectives

-to investigate vitamin D status in short children treated with Growth Hormone  
- to investigate if the known effects of GH therapy on glucose metabolism are modulated by vitamin D supplementation

## Methods

41 children treated with Growth Hormone for short stature were evaluated 6 months before and 6 months after receiving vitamin D 1000 UI/day. We analyzed:

1. Vitamin D status
2. the response to Growth Hormone therapy: evaluated with: growth velocity (GV) expressed in cm/ year, GV SDS,  $\Delta$  GV SDS;  $\Delta$  Height(Ht) SDS during the 6 months prior to vitamin D administration and after 6 months of vitamin D
3. glucose homeostasis was evaluated with: glucose, HbA1S, Insulin, HOMA index before starting vitamin D supplementation and 6 month after vitamin D administration.



## Results

Vitamin D level was below 30 ng/ml in all our patients and below 10 ng/ml in 15% of the patients. Vitamin D supplementation with 1000 UI (colecalciferolum) for 6 months increased vitamin D level over 30 ng/ml in 56% of the patients and over 10 ng/ml in all the patients. Vitamin D administration for 6 months had a demonstrable influence on insulin concentration and insulin sensitivity: In Vitamin D < 10 ng/ml patients insulin correlated positively with vitamin D concentration. Vitamin D administration and Vitamin D > 30 ng/ml were associated with a decreasing tendency in insulin concentration and HOMA index. Vitamin D administration for 6 months seemed to improve growth response to GH therapy as proved by increased GV SDS.

## Conclusions

Vitamin D evaluation and supplementation is needed in patients with GH therapy for decreasing the glucose metabolism consequences of GH therapy and in the long time for improving response to therapy. During therapy with GH in short children vitamin D level should be maintained > 30 ng/ml for optimizing the therapeutic response on growth and glucose homeostasis. Effects of vitamin D supplementation/ normalization on response to GH therapy will be better proved by a longer period of vitamin D administration and of normal vitamin D levels.

## References:

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