Expression of Vitamin D Receptor Pathway Genes in Subcutaneous Adipose Tissue of Obese Individuals

INTRODUCTION

- Approximately 50% of pediatric patients in the U.S. have vitamin D deficiency.
- Obesity and vitamin D deficiency are uniquely associated with hypertension, elevated fasting glucose levels, and increased risk of metabolic syndrome.
- Increasing prevalence of pediatric obesity correlates with many more children with low 25OHD levels.
- 25OHD levels correlate with other physiological markers of vitamin D effects in lean individuals but not obese individuals.
- Obese patients with low 25OHD commonly have no improvement in levels despite high doses of vitamin D treatment.

SIGNIFICANCE: Provide foundational knowledge to understand if expression of Vitamin D Receptor (VDR)-target genes may be used as reference standard for vitamin D status in body

Hypothesis: VDR-target gene expression in obese individuals will:
1. Correlate with each other in subcutaneous adipose tissue.
2. Will not correlate with circulating vitamin D levels.

METHODS

- Adipose Tissue
- Housekeeping genes
  - GAPDH
  - RPLP0
- VDR-target genes
  - VDR
  - CYP24A1
  - PPARγ
  - TLR4
  - THBD

RESULTS

Figures 1-6. Gene expression vs serum 25OHD levels

CONCLUSIONS

- Preliminary findings: VDR-target gene expression correlates with each other but not with circulating serum 25(OH)D levels
- 25(OH)D levels may not indicate levels of vitamin D action and may not be appropriate indicator of vitamin D deficiency in obesity