

# SCLEROSTIN DISTRIBUTION IN CHILDREN AND ADOLESCENTS WITH TYPE 1 DIABETES MELLITUS (T1DM) AND CORRELATION WITH BONE METABOLISM MARKERS AND BONE MINERAL DENSITY

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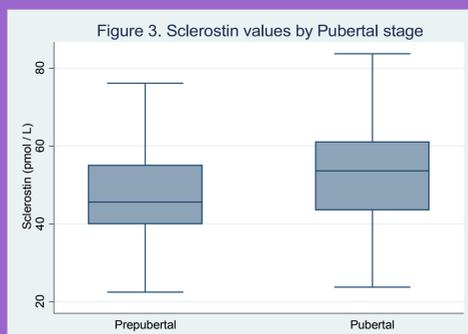
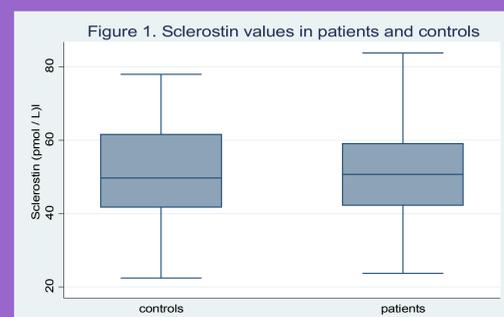
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**Introduction:** Sclerostin is an inhibitor of the Wnt/b-catenin bone metabolic pathway. Increased Sclerostin levels and reduced Bone Mineral Density (BMD) have been documented in adult patients with Diabetes Mellitus (DM), predominantly in those with T2DM. No relevant data exist on childhood T1DM. Our aim was to study plasma Sclerostin concentration in children and adolescents with T1DM and controls and to correlate Sclerostin levels with metabolic bone markers and BMD.

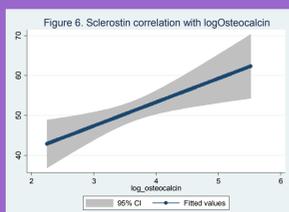
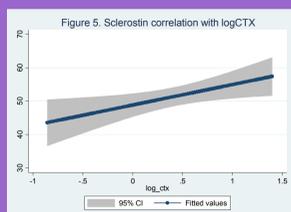
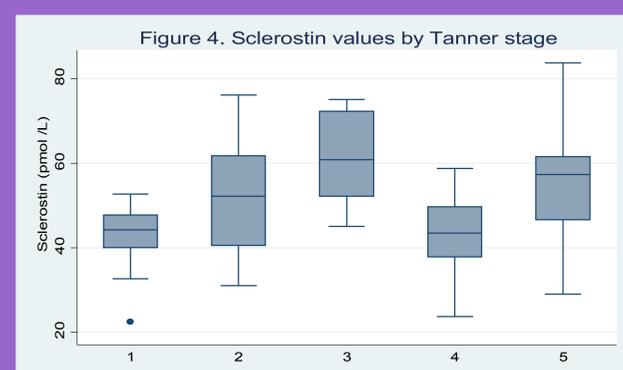
**Materials and Methods:** Forty children and adolescents with T1DM were evaluated (mean±SD age:13.04±3.53years, T1DM duration:5.15±3.33years), along with 40 healthy matched controls (mean±SD age 12.99±3.3years). Sclerostin, Osteocalcin, C-telopeptide crosslinks-CTX, electrolytes, PTH, total 25(OH) D and total body BMD were measured.

**Results:** Sclerostin levels demonstrated a Gaussian distribution (Shapiro-Wilk  $z=-1.685$ ,  $p=0.95$ , kurtosis= 2.77, skewness= 0.13), with no significant difference between patients and controls ( $51.56\pm12.05$  vs  $50.98\pm13.55$  pmol/L,  $p=0.84$ ). (Figure 1.)

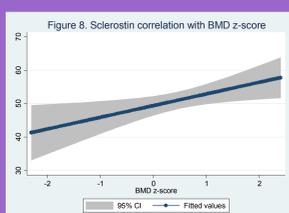
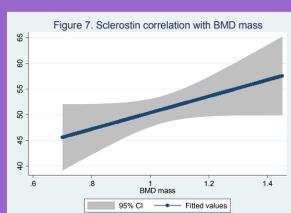


Lower values were found in girls ( $49.1\pm12.7$  vs  $53.9\pm12.3$  pmol/L,  $p=0.05$ ) (Figure 2.) and in pre-pubertal children ( $47.3\pm11.6$  vs  $53.3\pm12.9$  pmol/L,  $p=0.02$ ). (Figure 3.)

Sclerostin values significantly and gradually increased in children through pubertal Tanner stages 1 to 3, then reduced in stage 4 adolescents and increased again in pubertal stage 5 adolescents (ANOVA  $F=4.56$ ,  $p=0.0024$ ). (Figure 4.)



Sclerostin levels were positively correlated with logCTX ( $r=0.41$ ,  $p<0.001$ ), logOsteocalcin ( $r=0.33$ ,  $p=0.004$ ), total body BMD ( $r=0.34$ ,  $p=0.0018$ ) and BMD Z-score ( $r=0.27$ ,  $p=0.015$ ). (Figures 5, 6, 7, 8 respectively)



**Conclusions:** T1DM children and adolescents had similar levels of Sclerostin with controls. Sclerostin was correlated with both resorption and formation markers and also with bone mass indices, gender and pubertal stage. The decrease in sclerostin values observed in pubertal stage 4 adolescents coincides with the concurrent growth spurt, and is consistent with sclerostin physiology as an inhibiting signal of bone formation.

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