

Baseline bone mineral density (BMD) of patients in an ongoing study of homocystinuria due to cystathionine beta-synthase deficiency (HCU)

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BACKGROUND: HCU is a disorder of methionine metabolism, leading to accumulation of homocysteine. Skeletal abnormalities including osteoporosis are common in poorly-controlled patients, but onset may be delayed or prevented with consistent biochemical control. patients, but onset may be delayed or prevented with consistent biochemical control. CBS-HCY-NHS-01 is an observational study of the study of the natural history of patients with HCU on current therapy.

METHODS: Baseline BMD was assessed in 30 patients by dual-energy X-ray absorptiometry (DXA). Z-scores (BMD normalized for age, gender, height) were calculated for one or more of the three areas: hip, spine, total body. A Z-score of -2.0 or lower is below expected for age.

RESULTS: Mean (SD) Z-scores for the hip, spine and body were -0.52 (1.49), -0.41 (1 .40), and -0.58 (1.40), respectively; 5/27 (18.5%), 5/27 (18.5%), and 4/22 (18.2%) had Z-scores < -2.0 for the hip, spine and total body, respectively. A total of 8/30 (26.7%) had at least 1 Z-score < -2.0. The mean (SD) Z-scores for pediatric patients (< 18 y) were -0.64 (1.57), -0.23 (1.38), and -0.42 (1.38) for the hip, spine and total body, respectively, and -0.45 (1.49), -0.53 (1.44), and -0.75 (1.46), respectively for adults. Preliminary analyses have not revealed correlations between Z-scores and either age or concurrent plasma total homocysteine or methionine levels. All subjects were on a diet that restricted natural protein and included medical formula; all had normal calcium levels.

DISCUSSION: The majority of BMD values in a population of pediatric and adult patients were found to be within normal range. The incidence of patients with at least 1 Z-score < -2.0 (26.7%) is lower than that reported by Weber et al (38% of 19 patients). The mean Z-score of our pediatric cohort was similar to that of five Korean patients reported by Lim et al. We did not find any relationship between Z-scores and concurrent metabolic control. Our ongoing study will be able to shed a light on the status and clinical course of BMD in pediatric and adult patients with HCU.