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DECREASED BONE STRENGTH IN CHILDREN WITH GROWING PAINS AS MEASURED BY QUANTITATIVE ULTRASOUND

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BACKGROUND: "Growing pains" (GP), are the most common cause of childhood musculoskeletal pain. The etiology is unknown. GP is diagnosed on the basis of typical clinical characteristics. Quantitative ultrasound (QUS) measurement of bone speed of sound (SOS) was recently developed for the diagnosis of osteoporosis. Since GP occur most frequently late during the day, GP may represent an overuse syndrome. We therefore hypothesized that children with GP have decreased bone strength. OBJECTIVE: To investigate whether GP are associated with bone strength changes in the painful tibial region. PATIENTS AND METHODS: We studied 39 children with GP, 15 female and 24 male (mean age 8.5 ± 3.2 and 7.9 ± 2.1 years). Bone SOS was measured by QUS in mid-tibial and radial bones. Unpaired Student t-test was used to compare patients and norms of healthy controls. Pearson correlation was used to evaluate the relationship between bone SOS, physical activity and calcium intake. RESULTS: Tibial SOS was significantly reduced in children with GP as compared to healthy controls (Z score = -0.55 for males and –0.89 for females, $P < 0.004$, 0.001, respectively). Radial SOS was significantly reduced only in females with GP. No correlation was found between the patient's bone SOS, demographic data, calcium intake and physical activity. CONCLUSION: These results suggest that decreased bone strength may be a contributing factor in the pathogenesis of GP and support the notion that GP may represent an overuse syndrome.