

Abstract

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Calcium absorption and bone mineral density in celiacs after long term treatment with gluten-free diet and adequate calcium intake.

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OBJECTIVE: Calcium malabsorption, hypocalcemia and skeletal demineralization are well-recognized features of untreated celiac disease. This study investigates calcium absorption and bone mineral density (BMD) after a prolonged, over 4 years, treatment with a gluten-free diet.

METHODS: Twenty-four adult females with treated celiac disease and twenty age- and sex-matched control subjects were studied.

RESULTS: Mean body mass index (MBI), energy intake, serum calcium, and serum 25(OH)D concentrations in treated celiacs did not differ from controls. However, while both dietary calcium and protein intake were significantly higher in celiacs ($P < 0.012$), fractional calcium absorption was lower (mean percentage \pm SD; treated 39.8 ± 12 versus controls 52.3 ± 10 , $P < 0.001$). Thus, after adjusting for calcium intake, the estimated amount of calcium absorbed daily was similar in both groups. Whole body, spine and trochanter BMD were significantly lower in treated celiac patients compared with controls ($P < 0.05$). There were significant inverse correlations between: serum parathyroid hormone (PTH) and femoral neck or total body BMD ($P < 0.01$), PTH and duration of gluten-free diet ($P = 0.05$), and fractional calcium absorption and alkaline phosphatase ($P = 0.022$).

CONCLUSION: Increased calcium intake could potentially compensate for the reduced fractional calcium absorption in treated adult celiac patients, but may not normalize the BMD. In addition, the inverse correlation between PTH and time following treatment is suggestive of a continuing long-term benefit of gluten withdrawal on bone metabolism in celiac patients.

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