Association of vitamin K deficiency with bone metabolism and clinical disease activity in inflammatory bowel disease.


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OBJECTIVE: Inflammatory bowel disease (IBD) is a chronic inflammatory process in the digestive tract and patients with IBD develop osteopenia. Although vitamins K and D are important for maintaining bone health and inhibiting inflammation, their roles in patients with IBD are not clear. We investigated the roles of vitamins K and D in the bone health and inflammation in patients with IBD.

METHODS: Bone mineral density (BMD) of patients with IBD (Crohn's disease [CD], n = 47, and ulcerative colitis [UC], n = 40) was measured with dual-energy X-ray absorptiometry. Vitamin K and D levels of patients with IBD and healthy volunteers (n = 41) were evaluated by measuring serum undercarboxylated osteocalcin and 1,25 dihydroxyvitamin D, respectively. Clinical activity index was evaluated in patients with CD and UC.

RESULTS: BMD was low in patients with CD and UC. Serum undercarboxylated osteocalcin levels were significantly higher in patients with CD, but not with UC, compared with healthy subjects, indicating that bone vitamin K is insufficient in patients with CD. The levels of undercarboxylated osteocalcin were significantly correlated with the clinical activity index of CD, although they were not correlated with BMD. The levels of 1,25 dihydroxyvitamin D were significantly lower in patients with CD and UC than in healthy subjects. The levels of 1,25 dihydroxyvitamin D were inversely correlated with BMD in patients with UC and were not correlated with the clinical activity index of CD.

CONCLUSION: Vitamins K and D are insufficient in patients with IBD. Insufficiency of vitamin K is suggested to be associated with inflammatory processes of CD.