

The effect of vitamin K2 supplement and bone status after lung and heart transplantation

Førli L¹, Bollerslev J¹, Simonsen S², Isaksen G¹, Kvamsdal K¹, Godang K¹, Gadeholt, G.³ and Bjørtuft Ø⁴.

¹Medical Department, ²Department of Cardiology, ³Department of Medical Biochemistry, ⁴Department of Respiratory Medicine, Rikshospitalet, Oslo, Norway

Abstract

Bone disease after transplantation is a recognized clinical problem and there is ongoing need for improved treatment. Studies in the last years have given strong indications for vitamin K to have an important role in optimal bone health. The aim of this double blind prospective longitudinal study was to investigate the effect of vitamin K2 supplement (180 µg menakinon (MK)-7) on bone mineral density (BMD) in the first year after lung and heart transplantation.

We investigated 35 lung patients and 59 heart patients. The linear mixed model for repeated measurements for lumbar BMD showed that patients on MK-7 had significantly ($p=0.046$) higher BMD than those on placebo after controlling for potential confounders including the use of bisphosphonates. The mixed model for ward BMD after transplantation showed a borderline significant favourable effect of MK-7 ($p=0.075$), while no effect of bisphosphonates. For the femur neck model MK-7 and bisphosphonates showed a similar tendency, estimate=0.013, $p=0.1$ and estimate=0.019, $p=0.1$, respectively, while calcidiol showed a significant ($p=0.034$) association. Insufficient vitamin D status was common and even more so in the heart patients. One year after transplantation intact parathyroid hormone was higher in the MK-7 supplemented group than in the placebo group indicating an insufficient vitamin D status and a higher need for vitamin D in the vitamin K2 supplemented group.

Supplementation with vitamin K2 the first year after lung and heart transplantation seemed to have a favourable effect on trabecular bone. Vitamin D status should receive more attention.