

Abstract

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Suboptimal vitamin K status despite supplementation in children and young adults with cystic fibrosis.

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BACKGROUND: For children and adolescents with cystic fibrosis (CF) and pancreatic insufficiency, the efficacy of routine vitamin K supplementation to normalize vitamin K status remains unclear.

OBJECTIVE: This study examined and determined predictors of vitamin K status in subjects aged 8-25 y with CF and pancreatic insufficiency taking various vitamin K supplements.

DESIGN: In 97 subjects, serum 25-hydroxyvitamin D [25(OH)D], dietary intake, vitamin K supplement intake, and vitamin K status-determined on the basis of the percentage of serum undercarboxylated osteocalcin (%ucOC; sufficient: <20%) and plasma proteins induced by vitamin K absence-factor II (PIVKA-II; n = 60; sufficient: <=2 mug/L)-were assessed. The vitamin K supplementation groups were as follows: <150 mug/d (low; multivitamins/no supplement), 150-999 mug/d (middle; CF-specific vitamins), and >=1000 mug/d (high; mephyton). %ucOC values were compared with 140 healthy subjects aged 6-21 y.

RESULTS: In subjects with CF, the median (range) %ucOC was 35% (3%, 76%) and the median (range) for PIVKA-II was 2 (0, 42) mug/L. Subjects with CF had a higher %ucOC with low [45% (10%, 76%)] and medium [41% (3%, 66%)] supplement intakes but not with a high supplemental intake [16% (4%, 72%)] compared with healthy subjects [23% (0%, 43%); both P < 0.05]. Supplementation group for males and females and 25(OH)D and age for males were significant predictors of vitamin K status.

CONCLUSIONS: Vitamin K status was often suboptimal despite routine supplementation. Only subjects taking high-dose vitamin K achieved a status similar to healthy subjects, and only the vitamin K supplementation dose predicted vitamin K status for males and females. These data suggest that higher doses of vitamin K are required.

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