

Abstract

Nutr Res. 2009 Sep;29(9):676-83.

Prevalence of vitamin K and vitamin D deficiency in patients with hepatobiliary and pancreatic disorders.

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OBJECTIVE: Little is known about the role of fat-soluble vitamins K and D in liver function and bone metabolism in biliary and pancreatic diseases associated with cholestasis and/or fat malabsorption. The aim of this study was to determine vitamin K of bone, vitamin D and parathyroid hormone status in patients with biliary and pancreatic disorders.

METHODS: In 90 consecutive patients (mean +/- SD age, 65.5 +/- 17.7 years; 45 females) undergoing endoscopic retrograde cholangiopancreatography (68 with choledocholithiasis, 14 with other benign condition, and 8 with cholangiopancreatic cancers) fasting concentrations of carboxylated (cOC) and undercarboxylated osteocalcin (ucOC), 25-hydroxyvitamin D, calcium, phosphorus, magnesium, prothrombin time, liver function tests, lipase, and creatinine were measured.

RESULTS: Vitamin D deficiency (25-hydroxyvitamin D <50 nmol/L) was found in 45.6% of patients and elevated parathyroid hormone levels in 27.8%. The ratio ucOC/cOC (index of vitamin K deficiency) was above 20% in 50.6% of patients, above 30% in 31%, and above 50% in 18.4%. Hyperbilirubinemia was a significant independent predictor of low cOC (odds ratio [OR], 11.6; 95% confidence interval [CI], 1.9-59.4; P = .07). The ratio ucOC/cOC positively correlated with alanine aminotransferase levels (r = 0.410; P < .001). Elevated gamma-glutamyltransferase (>180 U/L) and international normalized ratio (>1.1) levels were significant independent predictors of ucOC/cOC greater than 30% after adjustment for other covariants (OR, 5.5; 95% CI, 1.2-25.2; P = .027, and OR, 3.1; 95% CI, 1.1-8.8; P = .036, respectively).

CONCLUSIONS: This study demonstrates that vitamin K and vitamin D deficiencies are common in patients undergoing endoscopic retrograde cholangiopancreatography. Liver dysfunction is associated with and predictive of vitamin K deficiency of bone and decreased production of osteocalcin, indicating the need for appropriate supplementation.

PMID: 19854384