Abstract

*Background*: Vitamin K is necessary for the functional activation of vitamin K dependent proteins via gamma-carboxylation process. These proteins are present in bone and cartilage beside their participation in coagulation cascade. *Aim of the work*: This study aimed to assess plasma vitamin K1 (phylloquinone) concentrations in primary early osteoarthritis (KOA) patients and to correlate these levels with clinical parameters and radiological progression using plain radiography and musculoskeletal ultrasound (MSUS). *Patients and methods*: We measured baseline vitamin K1 in the plasma from 40 early KOA patients and from 20 healthy controls. In the patients, numerical rating scale of pain (NRSP) and The Western Ontario McMaster scale (WOMAC) were recorded. The Thomas grading score and MSUS examination were performed at baseline and after 12 months to assess radiological progression. *Results*: The KOA patients had a mean age of 50.4±4.9 years, 36 females:4 males and had a disease duration of 12.7±5.7 months. In KOA patients plasma vitamin K1 levels (1.6±0.9 nmol/l) were highly significantly decreased compared to healthy control (2.04±0.7 nmol/l)(p<0.05). In KOA patients, the plasma levels of vitamin K1 significantly correlated with baseline medial condyle cartilage thickness (r=0.46,p<0.05), and vitamin K deficiency had a significantly increased risk of radiological progression as assessed by MSUS (p=0.004)(two-fold increased risk, RR 2.08). *Conclusions*: Knee osteoarthritis patients have significantly decreased plasma levels of vitamin K that was remarkably associated with radiological progression of early disease suggesting that it could be a useful marker to reflect OA severity and implies a possible role in the disease pathogenesis