

Significance of serum phosphorus, and vitamin D in papillary thyroid cancer patients in the eastern coastal China

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BACKGROUND: Vitamin D deficiency is closely related with various cancers, while the clinical studies about serum vitamin D levels and thyroid cancer are few and inconsistent. Besides, the relationship between vitamin D levels and thyroid cancer in China was not available.

HYPOTHESIS: So we want to find whether there has a difference in serum vitamin D levels and other test items of thyroid cancer compared with controls. We also want to assess their association with clinical characteristics and prognostic factors in papillary thyroid cancer (PTC) individuals. Was there a difference about the percentages of vitamin D deficiency (<20 ng/ml), suboptimal vitamin D (20-40 ng/ml) and optimal vitamin D (>40 ng/ml) among the healthy, benign and thyroid cancer patients?

METHODS: We investigated vitamin D levels and other test items , including 25-hydroxyvitamin D (25(OH)D), calcium, phosphorus, triiodothyronine (T3), free triiodothyronine (FT3), tetraiodothyronine (T4), free tetraiodothyronine (FT4), thyrotropin (TSH) and C-reaction protein (CRP) , in 62 pre-operation thyroid cancer patients, 25 benign controls, and 53 healthy controls. The comparisons of all analyses values among healthy controls, benign, and thyroid cancer were estimated by One-Way ANOVA. Odds ratio of thyroid cancer according to serum phosphorus, 25(OH)D and TSH levels using logistic regression model. Subjects were compared for differences in phosphorus, and 25(OH)D data using a Wilcoxon rank sum test according to the patient characteristics, including age, sex, BMI, smoking status, drinking status, family history of cancer, tumor diameter, stage, number of positive lymph nodes, calcification, and collagen. The association between variables and thyroid cancer prognostic factors was evaluated by spearman correlation.

RESULTS: Increased serum phosphorus concentrations, decreased vitamin D levels, and increased TSH levels in thyroid cancer than control. Serum phosphorus levels were inversely related with calcification and collagen, and vitamin D levels were negatively correlated with smoking status. The percentage of vitamin D deficiency was greatest among PTC patients. Serum phosphorus and vitamin D levels are associated with increased risk of PTC, and vitamin D could serve as a potential biomarker of thyroid cancer.