

Abstract

BMC Endocr Disord. 2008 Jan 25;8(1):2

The role of Se, vitamin C, and zinc in benign thyroid diseases and of Se in malignant thyroid diseases: low Se levels are found in subacute and silent thyroiditis and in papillary and follicular carcinoma.

Moncayo R, Kroiss A, Oberwinkler M, Karakolcu F, Starzinger M, Kapelari K, Talasz H, Moncayo H.

BACKGROUND: Thyroid physiology is closely related to oxidative changes. The aim of this controlled study was to evaluate the levels of nutritional anti-oxidants such as vitamin C, Zn and Se, and to investigate any association of them with parameters of thyroid function and pathology including benign and malignant thyroid diseases.

METHODS: This controlled evaluation of Se included a total of 1401 subjects (1186 adults and 215 children) distributed as follows: control group (n=687), benign thyroid disease (85 children and 465 adults); malignant thyroid disease (2 children and 79 adults). Clinical evaluation of patients with benign thyroid disease included sonography, scintigraphy, as well as the determination of fT3, fT4, TSH, thyroid antibodies levels, Se, Zn, and vitamin C. Besides the routine oncological parameters (TG, TSH, fT4, ultrasound) Se was also determined in the cases of malignant disease. The local control groups for the evaluation of Se levels were taken from a general practice (WOMED) as well as from healthy active athletes. Blood samples were collected between 8:00 and 10:30 a.m. All patients lived in Innsbruck. Statistical analysis was done using SPSS 14.0. The Ho stated that there should be no differences in the levels of antioxidants between controls and thyroid disease patients.

RESULTS: Among the thyroid disease patients neither vitamin C, nor Zn nor Se correlated with any of the following parameters: age, sex, BMI, body weight, thyroid scintigraphy, ultrasound pattern, thyroid function, or thyroid antibodies. The proportion of patients with benign thyroid diseases having analyte concentrations below external reference cut off levels were 8.7% of cases for vitamin C; 7.8% for Zn, and 20.3% for Se. Low Se levels in the control group were found in 12%. **Se levels were significantly decreased in cases of sub-acute and silent thyroiditis** (66.4+/-23.1 ug/l and 59.3+/-20.1 ug/l, respectively) as well as in follicular and papillary thyroid carcinoma. The mean Se level in the control group was 90.5+/-20.8 ug/l.

CONCLUSIONS: The Ho can be accepted for zinc levels whereas it has to be rejected for Se. **Patients with benign or malignant thyroid diseases can present low Se levels as compared to controls.** Low levels of vitamin C were found in some subgroups of patients.

PMID: 18221503