Abstract

J Trace Elem Med Biol. 2010 Apr;24(2):106-10.

Trace elements status in multinodular goiter.

Giray B, Arnaud J, Sayek I, Favier A, Hincal F.

Hacettepe University, Faculty of Pharmacy, Department of Toxicology, Ankara 06100, Turkey.

OBJECTIVE: Importance of iodine and selenium in thyroid metabolism is well known, but the roles of other essential trace elements including copper, zinc, manganese and iron on thyroid hormone homeostasis remain unclear. The aim of this study was to investigate the status of those trace elements in benign thyroid diseases and evaluate possible links between trace element concentrations and thyroid hormones.

METHODS: The study group was composed of 25 patients with multinodular goiter. Concentrations of thyroid hormones (plasma-free thyroxine, FT(4); free triiodothyronine, FT(3); and thyrotropin, TSH), selenium, copper, zinc, manganese and iron in plasma, and urinary iodine were determined. The results were compared with those of a healthy control group (n=20) with no thyroid disorder.

RESULTS AND CONCLUSIONS: A mild iodine deficiency was observed in the patients with multinodular goiter whereas urinary iodine levels were in the range of "normal" values in healthy controls. All patients were euthyroid, and their thyroid hormone concentrations were not significantly different from the control group. Plasma selenium, zinc and iron concentrations did not differ from controls, while copper and manganese levels were found to be significantly higher in the patients with multinodular goiter indicating links between these trace elements and thyroid function and possibly in development of goiter. Besides iodine, there was a significant correlation between plasma copper concentration and FT(3)/FT(4) ratio.

PMID: 20413068