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Introduction and Objectives:

Permanent hypothyroidism is a common side effect of thyroidectomy. Thyroxine binding globulin (TBG) deficiency is characterized with low total thyroid hormones (TH) in the presence of normal free THs and normal thyroid stimulating hormone (TSH).

Case report:

A previously healthy 37-year-old man underwent annual health check-up. Thyroid ultrasonography revealed a 24x14x19mm isoechoic solid nodule in the left lobe. TSH was 1,4 (0,27-4,2 μ IU/mL). Fine needle aspiration (FNA) revealed Bethesda Category IV (follicular neoplasm or suspicious for follicular neoplasm) and thyroidectomy was recommended. He admitted to endocrinology outpatient clinic (EOC) for preoperative assessment. Thyroid antibodies, calcitonin, parathyroid hormone, calcium and phosphorus were within normal ranges. Left lobectomy was performed. Surgical pathology revealed a follicular adenoma. General surgery outpatient clinic referred patient to endocrinology clinic 1.5 months later with low total TH levels (TSH: 2,12, total triiodothyronine (T3): 0,41(0,8-2 ng/mL), total thyroxine (T4): 3,41 (5,1-14,10 μ g/dL)). Laboratory tests were repeated: TSH: 1,9, free T3: 2,29 (1,8-4,6 pg/mL), free T4: 1,57 (0,93-1,7 ng/dL) were normal while total T3: 0,35 and total T4: 2,81 were low. Low total THs in the presence of normal TSH and free THs suggested TBG deficiency (TBGD). TBG was 3,54 (14-31 μ g/mL). In the absence of secondary disorders (malnutrition, liver or renal disease, drugs) causing low TBG levels, he was diagnosed as having inherited TBGD (iTBDG). He was informed about iTBDG but he declined any genetic analysis.

Conclusions:

TBDG is a nonharmful condition that is either acquired (aTBDG) due to lack of protein supply or synthesis, loss of urinary protein; or X linked inherited TBDG (iTBDG). Complications are those stemming from the primary disorders and erroneously administered L-thyroxine treatment. In complete iTBDG males have no detectable TBG while in partial iTBDG, males have some measurable TBG. Evaluation of thyroid function only with total THs may lead to a misdiagnosis of hypothyroidism and unnecessary treatment.

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