

Analysis of ultrasound structure of the thyroid gland and assessment of structural changes in patients with diabetes mellitus type 1 at different stages of chronic kidney disease

A. Sazonava¹, N. Karlovich², M. Astapovich², T. Mokhort¹

Belarusian State Medical University¹, Minsk City Endocrinological Dispensary²

Abstract

Existing data on the anatomical state of thyroid gland (ThG) in patients with chronic kidney disease (CKD) are contradictory

Objective

The aim was to analyze the anatomical features of the ThG and their correlation if it exists in patients with diabetes mellitus type 1 (DM 1) at different stages of comorbid CKD

Methods

Table 1. Characteristics of patients

	total N=53
Age, years	43,7±11,3
Male, female, n	17, 36
BMI, kg/m ²	25,8±5,0
Duration of DM 1, years	22,2±7,5
Age at onset of impairment of renal function, years	34,5±11,2
Duration of GFR decline, years	8,8±6,7
CKD stages 1, 2, 3, 4, 5D, n	6, 25, 19, 1, 2

GFR was estimated by using MDRD formula. All patients underwent thyroid ultrasound with the assessment of following **parameters**:

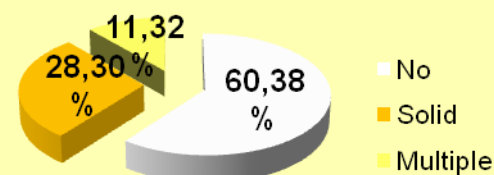
- ✓total volume of the ThG
 - ✓echostructure (homogenous, heterogenous)
 - ✓vascularization (expressed, moderate)
 - ✓hyperechoic cords (absence, expressed, moderate)
 - ✓echodensity (normal, increased, decreased)
 - ✓presence of local and any structural pathology.
- Revealed changes in the structure of the thyroid gland were analyzed. Nonparametric and descriptive statistical methods were used.

Results

Comparative analysis of patients in the subgroups according to CKD stages didn't reveal any reliable differences in the assessed parameters. We found significant correlation of hyperechoic cords ($r=0,286$; $p<0,05$), echodensity ($r=0,294$; $p<0,05$) and duration of GFR decline.

Total volume of thyroid gland correlates with echodensity ($r=-0,387$; $p<0,05$). Ultrasound data analysis showed the presence of deviation from the normal structure of ThG in 41 (77,36%) and local pathology in 21 patients (39,62%) respectively.

Chart 1. Presence of local pathology



Conclusions

The obtained data are controversial and require further detailed in-depth study. These results do not allow us to judge of the existing of relationship between structural changes of the thyroid gland and the presence of CKD.