

Insulin resistance is associated with larger thyroid volume in adults with type 1 diabetes

Anita Rogowicz-Frontczak, Stanisław Piłaciński, Anna Chwiałkowska, Bogna Wierusz-Wysocka, Dorota Zozulińska-Ziółkiewicz
Department of Diabetology and Internal Medicine

Background:

Larger thyroid volume and nodular thyroid disease were found to be associated with insulin resistance in patients with type 2 diabetes. Similar analyses is lacking in type 1 diabetes (T1DM).

Aims:

To check the association between thyroid volume and insulin resistance (IR) using estimated glucose disposal rate (eGDR) in patients T1DM.

Materials and methods:

99 consecutive patients with T1DM (44 women, 55 men) aged 29 (mean, SD=6) with diabetes duration 13 (6) years ,

Exclusion criteria: history of thyroid disease, current treatment of L-thyroxin or anti-thyroid drugs.

Thyroid evaluation:

Anti-thyroid peroxidase (ATPO), anti-thyroglobulin (ATg), anti- thyroid stimulating hormone (TSH) receptor (TRAb) antibodies, assays for TSH and free thyroid hormones (trijodothyronine, FT3, and thyroxin, FT4).

Thyroid was measured using ultrasonography.

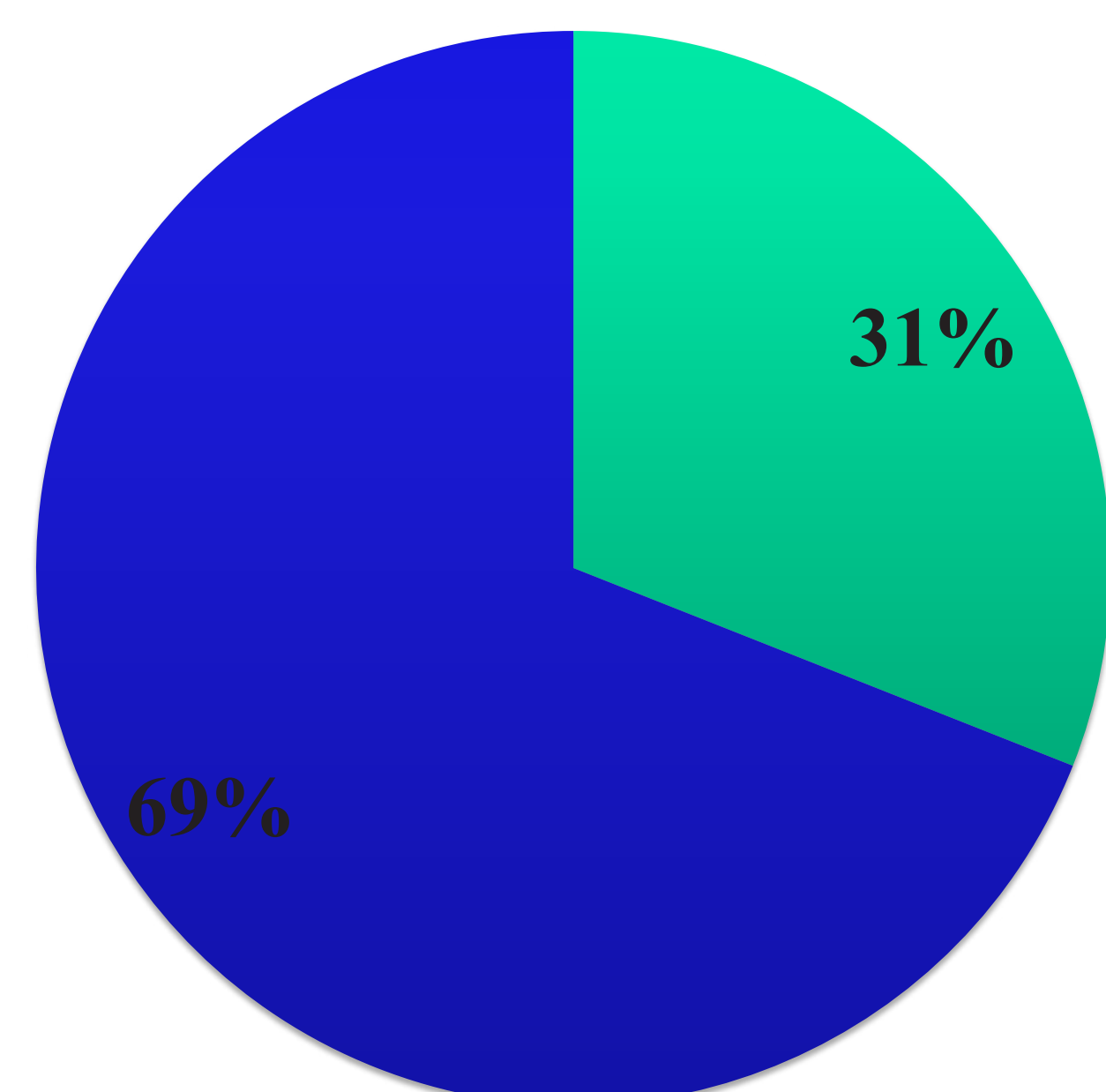
Insulin resistance estimation:

$eGDR = 24.4 - 12.97 \times WHR - 3.39 \times HT - 0.60 \times HbA1C$

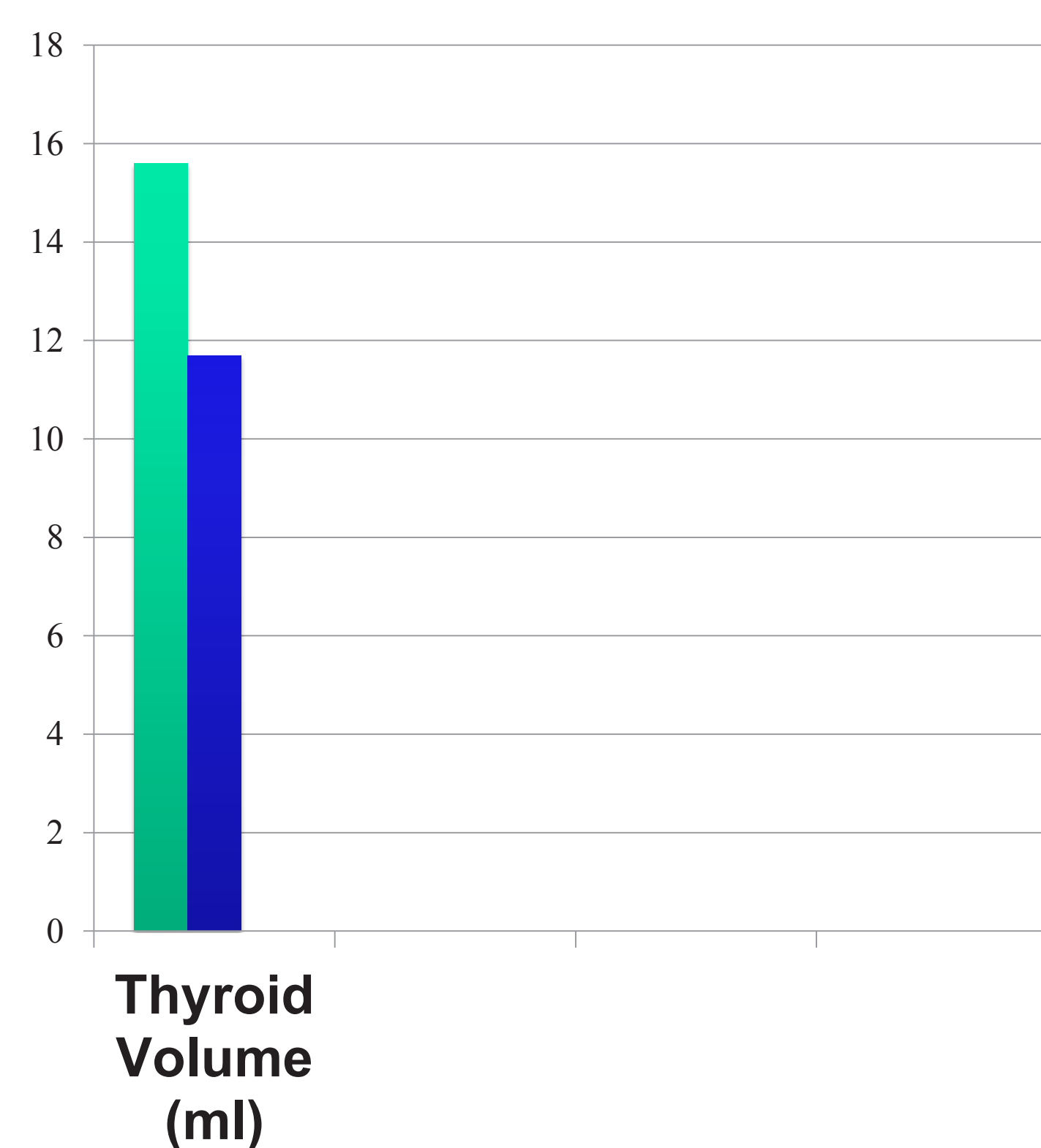
WHR -waist-to-hip ratio, HT - history of hypertension (yes =1, no = 0).

IR- if eGDR lower or equal 7.5

Results

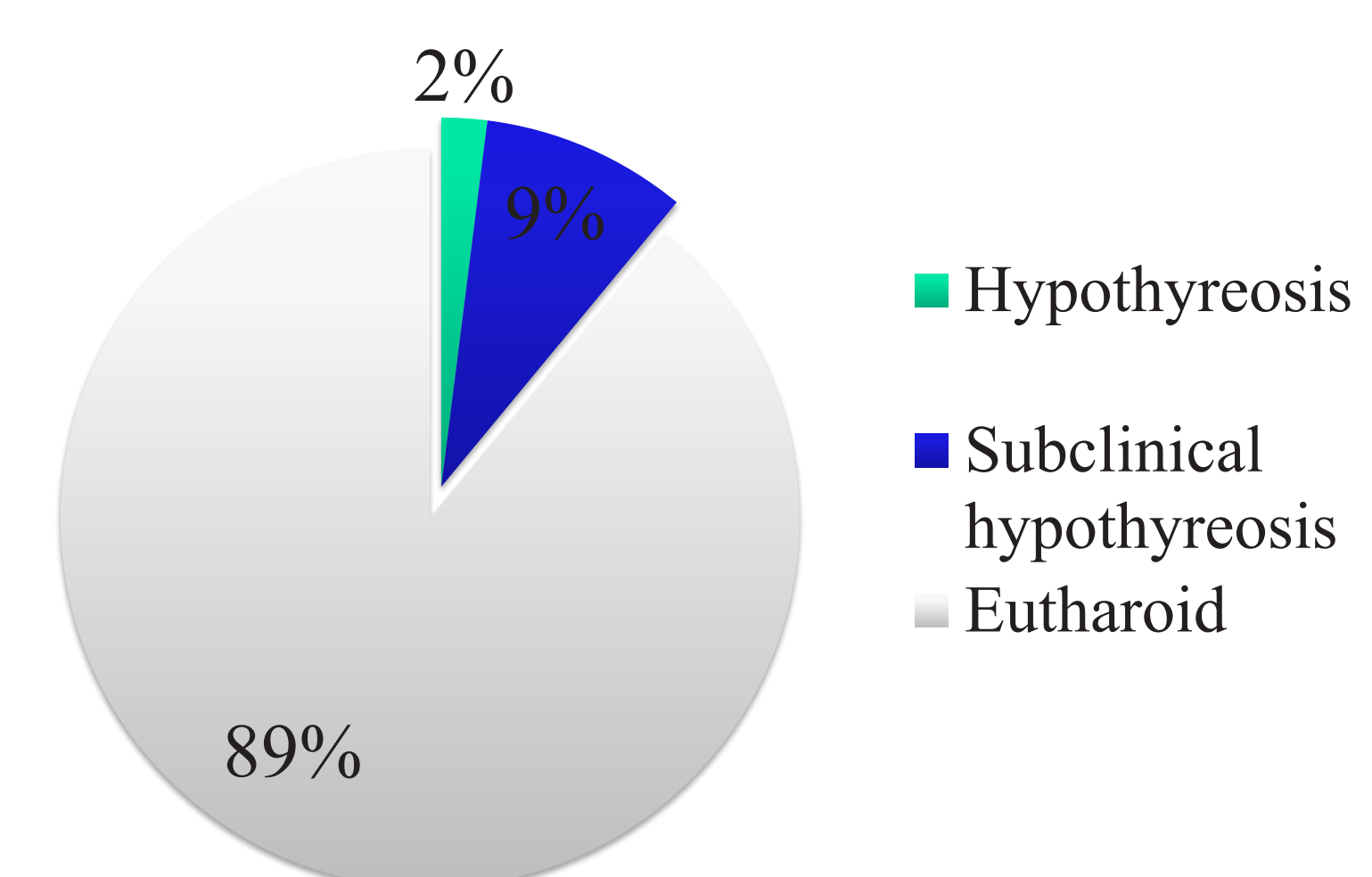


■ Positive for aTPO or aTg or TRAb
■ Negative for thyroid antibodies



■ Patients with IR
■ Patients with eGDR >7,5
■ p=0,002

All study group



■ Hypothyreosis
■ Subclinical hypothyreosis
■ Eutharoid

In multivariate linear regression model association between thyroid volume and eGDR was independent from sex, duration of diabetes, BMI, TSH and presence of thyroid autoimmunity (beta: -0.22, p=0.025).

Conclusion: Lower insulin sensitivity is associated with larger thyroid volume in patients with type 1 diabetes independently from body mass index and signs of autoimmune thyroid disease

