

Assessment of Thyroid Function and Volume in Hypogonadal Patients

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Abstract

Background: Hypogonadism is related to additional endocrine abnormalities. Thyroid abnormalities may be common in hypogonadism patients, although this association is not clear.

Objective: In this study, we examined the incidence of thyroid disorders in all types of hypogonadisms.

Methods: A case-control study of 68 hypogonadal patients and 74 age-matched healthy controls from the general population was conducted. Thyroid function, thyroid volume measurements, and presence of thyroid autoantibodies were examined.

Results: The mean body mass index and age of the patient and control groups were similar ($p = 0.43$ and $p = 0.407$, respectively). The thyroid status differed significantly between the patient and control groups ($p = 0.002$). Serum thyroid-stimulating hormone levels were significantly higher in hypogonadal patients than in controls ($p = 0.018$); however, serum free T4 and free T3 levels did not differ significantly between the two groups ($p = 0.29$ and $p = 0.63$, respectively). The presence of thyroid autoantibodies (anti-TPO and anti-TG) did not differ significantly between the patient and control groups ($p = 0.49$ and $p = 0.89$, respectively). There were no differences observed by ultrasonography between the patient and control groups (Table 1). Also, there were no differences in thyroid volumes between two groups (Table 2).

Conclusion: A high incidence of hyperthyroidism and a high incidence of hypothyroidism were observed in hypogonadal patients.

Table 1. Features of hypogonadal patient and control groups

Feature	Patient (N=68)	Control (N=72)	P-value
Age (years)	28.5±9.0	29.2±8.7	0.407
Gender (N; male/female)	57/11	64/8	0.382
BMI (%)	25.9±4.6	25.4±2.34	0.435
Free T3(pg/ml)	3.39±0.03	3.33±0.47	0.63
Free T4 (ng/ml)	1.22±0.31	1.16±0.35	0.29
TSH (μIU/ml)	2.56±0.97	1.69±0.85	0.018
Anti-TPO (N; positive/negative)	8/60	6/66	0.5
Anti-TG (N; positive/negative)	9/59	9/63	0.89
Thyroid status (n)			
Euthyroid	55	71	0.002
Hypothyroid	10	1	
Hyperthyroid	3	0	
Thyroid structure (n)			

Normal	39	47	0.590
Chronic Thyroiditis	14	11	
Multinodular	15	14	
Goiter			

BMI, body mass index; TSH, thyroid-stimulating hormone; TPO, thyroid peroxidase; TG, thyroglobulin

Table 2. Thyroid volumes of right and left lobes in hypogonadal patient and control groups

	Patient	Control	P-value
Right lobe (mL)	35.48±19.26	37.48±15.94	0.51
Left lobe (mL)	26.97±13.38	26.88±11.12	0.26
Total (mL)	59.67±30.34	68.02±43.45	0.22