

## THYROID HORMONES IN BENIGN PROSTATIC HYPERPLASIA

### Hypothesis / aims of study

Thyroid hormones play an important role in cell differentiation, growth, and metabolism. Several investigators have documented the role of thyroid hormones in the development of prostate cancer. However, to date there are only limited data available regarding thyroid hormone levels in benign prostatic hyperplasia (BPH). We examined the association between thyroid hormone and lower urinary tract symptoms (LUTS)/ BPH.

### Study design, materials and methods

A total of 5708 middle aged men who had participated in a health examination were included in the study. LUTS/BPH were assessed by international prostate symptom score (IPSS), prostate volume, maximal flow rate (Q<sub>max</sub>), and a full metabolic workup. Serum levels of thyroid-stimulating hormone (TSH) and free thyroxine (T4) were measured using chemiluminescence immunoassay by commercial kits. We divided participants into quartiles based on their TSH and free T4 levels: first quartile, Q1; second quartile, Q2; third quartile, Q3; and fourth quartile, Q4. We then investigated their relationship using statistical analyses.

### Results

The median age of the study group was 51.1 ± 5.2 years. There was a significant increase in the percentage of men with IPSS>7, Q<sub>max</sub><10 mL/sec, and prostate volume ≥30 mL, with increase of free T4 quartile (IPSS>7(%): Q1:57.2, Q2:56.7, Q3:60.3, Q4:62.5, P=.001; Q<sub>max</sub><10 mL/sec(%): Q1:3.5, Q2:3.2, Q3:4.1, Q4:4.8, P=.038; total prostate volume ≥30 mL(%): Q1:15.2, Q2:16.4, Q3:18.0, Q4:19.3, P=.002). After adjusting for age, body mass index, testosterone, and metabolic syndrome, the odds ratio for prostate volume ≥30 mL of free T4 Q3 and free T4 Q4 were significantly higher than free T4 Q1 [odds ratio; 5-95 PI), P value; Q1:.000 (references); Q2:1.140(.911-1.361), P=.291; Q3:1.260 (1.030-1.541), P=.025; Q4:1.367(1.122-1.665), P=.002]. After adjusting for age, body mass index, testosterone, metabolic syndrome, and prostate volume, the odds ratio for IPSS>7 of free T4 Q4 were significantly higher than that of free T4 Q1 (odds ratio (5-95 PI), P value; Q1:.000 (references); Q2:.969 (.836-1.123), P=.677; Q3:1.123 (.965-1.308), P=.133; Q4:1.221 (1.049-1.420), P=.010). However, TSH was not significantly related to IPSS, Q<sub>max</sub>, and total prostate volume in univariate and multivariate analyses.

### Interpretation of results

Prostate volume, IPSS, and Q<sub>max</sub> are significantly related to free T4, and prostate volume is significantly and independently related to free T4.

### Concluding message

We found a potential role of thyroid hormone in developing BPH.

### Disclosures

**Funding:** None **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** NPH IRB **Helsinki:** Yes **Informed Consent:** Yes