EC7_3

Subclinical Thyroid Disease and Heart Rate Profile Before, During and After Exercise Stress Testing Among Apparently Healthy Adults

Elad Maor[1], Shaye Kivity[2], Eran Kopel[2], Ilan Goldenberg[1], Yehezkel Sidi[2], David Olchovsky[2]

[1]*Leviev Heart Institute, Sheba Medical Center, Israel*

[2]*Internal Medicine Departments A and C, Sheba Medical Center, Israel*

Background:

Subclinical thyroid disease (SCTD) is being diagnosed more frequently in recent years. However, data on the effect of endogenous SCTD on exercise stress testing is limited. We hypothesized that SCTD would affect heart rate (HR) profile and exercise capacity among asymptomatic adults.

Methods:

We investigated 3,808 healthy subjects. All subjects answered questionnaires, were examined by a physician, completed blood tests including TSH, T3 and T4 levels, and underwent a treadmill exercise. Subjects with known thyroid disease or those who were taking thyroid related drugs were excluded. HR profile was compared between subjects with subclinical hypothyroidism (SCHypoT), normal thyroid functions and subclinical hyperthyroidism (SCHyperT) subjects.

Results:

Seventy subjects had SCHyperT and 278 had SCHypoT. Compared with unmatched normal subjects, SCHyperT subjects had higher resting HR (83 vs. 77 beats per minute [bpm], p=0.003), shorter exercise duration (540 vs. 585 seconds, p=0.003), and demonstrated lower HR reserve (80 vs. 86 bpm, p=0.008). Subjects with SCHypoT had lower resting HR (75 vs. 77 bpm, p=0.05), shorter exercise duration (544 vs. 585 seconds, p<0.001) and demonstrated lower HR reserve (83 vs. 86 bpm, p=0.001). Heart rate profile also remained significantly different after subjects were matched with normal subjects using propensity score matching.

Conclusions:

Subjects with subclinical thyroid disease have a significantly different heart rate profile during rest, exercise and recovery than their normal counterparts