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Effect of thyroxin treatment on carotid intima-media thickness reduction in patients with subclinical hypothyroidism: A meta-analysis of clinical trials**Aziz M^{1,2}, Kandimalla Y³, Machavarapu A³, Saxena A¹, Das S¹, Younus A¹, Nguyen M³, Malik R¹, Anugula D⁵, Latif M A¹, Humayun C¹, Khan I M¹, Adus A¹, Rasool A¹, Veledar E¹ and Nasir K^{1,5,6}**¹Baptist Health South Florida, USA²Benedictine University, USA³Ocala Regional Medical Center, USA⁴Creighton University Medical Center, USA⁵Florida International University, USA⁶Johns Hopkins University, USA

Aim: Research shows that Subclinical Hypothyroidism (SCH) is related to an increased Carotid Intima-Media Thickness (CIMT), a surrogate marker of subclinical Cardiovascular Disease (CVD). It is controversial whether or not SCH should be treated to reduce CVD morbidity and mortality. This meta-analysis aimed to determine whether SCH is associated with an increase in CIMT as compared to Euthyroidism (EU) and whether Thyroxin (T4) treatment in SCH can reverse the change in CIMT.

Methods: Two independent reviewers conducted an extensive database research up to December 2016. A total of 12 clinical trials discussed the effect of Thyroxin on CIMT values at pre and post-treatment in subjects with SCH.

Results: CIMT was significantly higher among SCH (n=280) as compared to EU controls (n=263) at baseline; the pooled Weighted Mean Difference (WMD) of CIMT was 0.44 mm [95% confidence interval (CI) 0.14, 0.74], p=0.004; I²=65%. After treatment with thyroxin in subjects with SCH (n=314), there was a statistically significant decrease in CIMT from pre- to post-treatment; the pooled WMD of CIMT decrease was [WMD-0.32; 95% CI (-0.47, -0.16), p<0.0001; I²=2%], and it was no longer different from EU controls [WMD 0.13 mm; 95% CI (-0.04, 0.30); p=0.14; I²=27%]. The total cholesterol (TC), triglycerides (TG) and Low-Density Lipoprotein (LDL) were higher in SCH as compared to EU controls and decreased significantly after treatment with thyroxin.

Conclusion: This meta-analysis shows that thyroxin therapy in subjects with SCH significantly decreases CIMT and improves lipid profile, modifiable CVD risk factors. Thyroid hormone replacement in subjects with SCH may play a role in slowing down or preventing the progression of atherosclerosis.

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