

UC Irvine

UC Irvine Previously Published Works

Title

Thyroid Disease as a Novel Risk Factor for Coronary Artery Calcification in Hemodialysis Patients

Permalink

<https://escholarship.org/uc/item/55m3g5xd>

Authors

Rhee, Connie
Budoff, Matthew
Novoa, Alejandra
[et al.](#)

Publication Date

2018

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

Abstract 12920: Thyroid Disease as a Novel Risk Factor for Coronary Artery Calcification in Hemodialysis Patients

Rhee, Connie¹; Budoff, Matthew²; Novoa, Alejandra¹; You, Amy¹; Nakata, Tracy¹; Nguyen, Danh¹; Kalantar-Zadeh, Kamyar¹

Author Information

¹Nephrology, Univ of California Irvine, Orange, CA

²Cardiology, Los Angeles Biomedical Resch Institute, Torrance, CA

Author Disclosures: **C. Rhee:** None. **M. Budoff:** None. **A. Novoa:** None. **A. You:** None. **T. Nakata:** None. **D. Nguyen:** None. **K. Kalantar-Zadeh:** None.

Abstract

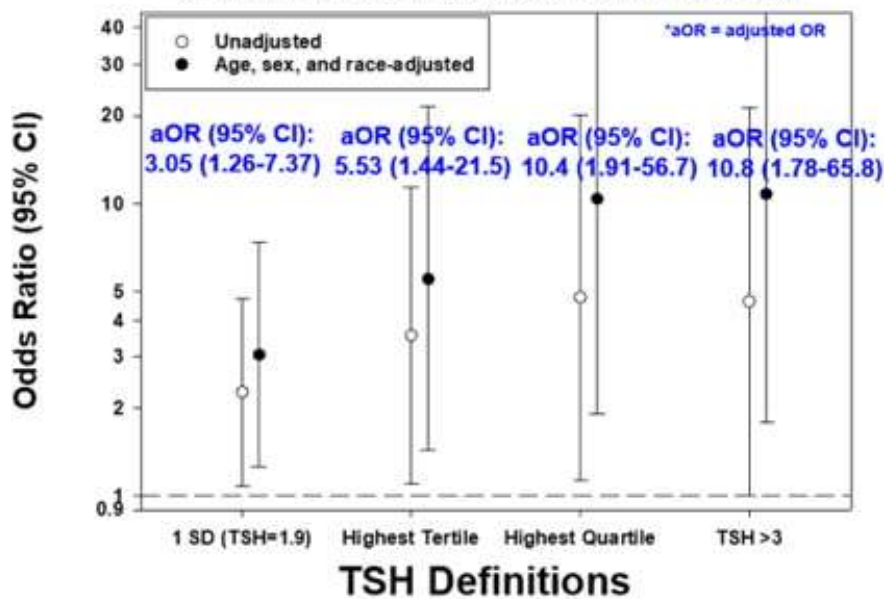
Background: Hypothyroidism is a highly prevalent yet underrecognized complication in hemodialysis (HD) patients. In the general population, hypothyroidism has been associated with coronary heart disease (CHD) events and death. Experimental models have shown that low levels of thyroid hormone (triiodothyronine [T3]) lead to vascular calcification due to downregulation of matrix Gla and klotho (vascular calcification inhibitors), corroborated by clinical studies showing a link between low T3 levels and heightened risk of coronary artery calcification (CAC). To date, no studies have examined the association of serum thyrotropin (TSH), the most sensitive and specific single biochemical metric of thyroid function, with CAC risk in HD patients.

Methods: Among 104 patients from the Anti-Inflammatory and Anti-Oxidative Nutrition in Hypoalbuminemic Dialysis Patients (AIONID) trial, we examined the association of serum TSH levels with total Agatston and volumetric CAC scores. Cross-sectional associations of TSH with CAC score (CAC score >100, threshold for which moderate non-obstructive coronary artery disease highly likely) were estimated using logistic regression models.

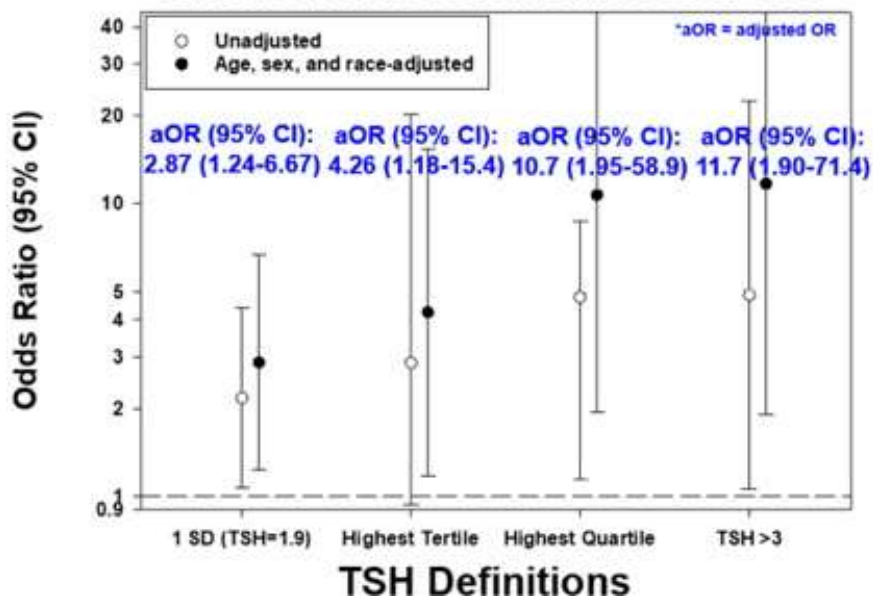
Results: In crude analyses, incrementally higher TSH levels ([DELTA]1SD=1.9mIU/L) were associated with higher Agatston score: OR (95%CI) 2.27 (1.08-4.75). When examined as a categorical variable, the highest TSH tertile and quartile were each associated with higher Agatston score (ref: lowest tertile/quartile): OR (95%CI) 3.55 (1.10-11.4) and 4.79 (1.14-20.2), respectively. We also observed TSH >3mIU/L was associated with higher Agatston score (ref: ≤3mIU/L): OR (95%CI) 4.64 (1.00-21.4). Following adjustment for age, sex, and race, we observed even stronger associations between TSH levels and higher Agatston scores. In adjusted analyses, we observed similar associations between higher TSH levels and higher total volumetric scores.

Conclusion: In HD patients, higher serum TSH levels were associated with higher risk of CAC. Further studies are needed to determine if thyroid hormone supplementation can attenuate or reduce CHD burden in this population.

SERUM TSH AND AGATSTON SCORE >100



SERUM TSH AND VOLUMETRIC SCORE >100



Thyroid hormones; Coronary artery calcification (CAC); Kidney