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412 - THE ROLE OF CORONARY ARTERY CALCIFICATION IN METAL-RELATED CARDIOVASCULAR DISEASE

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Resumen

Background/Objectives: Metals are associated with cardiovascular disease (CVD), but the underlying pathways remain largely unclear. We evaluated the potential intermediate role of coronary artery calcification (CAC) trajectory on the association between urinary metals and incident CVD, accounting for competing risks by death from other causes.

Methods: We used data from 6,459 participants of the Multi-Ethnic Study of Atherosclerosis (MESA). CAC was measured longitudinally using the spatially weighted calcium score in five exams, starting in 2000. Participants were followed for CVD events through 2019. Cadmium, cobalt, copper, uranium, tungsten, and zinc were measured in urine at the baseline visit (2000-2002). We used a causal inference algorithm with a path-specific effects approach for longitudinal mediation analysis to evaluate the intermediate role of CAC on the association between metals and incident CVD.

Results: The association with incident CVD mediated through the CAC trajectory was statistically significant for cadmium, cobalt, copper, tungsten, and zinc. The number of CVD cases (95%CI) per 100,000 person-years attributable to an interquartile range (IQR) increase in metal levels through the longitudinal trajectory of CAC was 44 (20, 72) for cadmium, 21 (6, 39) for cobalt, 19 (2, 36) for copper, 18 (2, 38) for tungsten, and 43 (26, 62) for zinc.

Conclusions/Recommendations: This study supports that part of the association between urinary metals and CVD is attributable to changes in CAC over time. In particular, half of the association between urinary cadmium and CVD might be mediated by longitudinal changes in CAC. This study could inform strategies for early detection and prevention of CVD based on urinary metal levels.

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