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Weight gain is a risk factor for the progression of coronary artery calcification in chronic kidney disease: from the KNOW-CKD study

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Objectives: In chronic kidney disease (CKD), patients with high body mass index or weight gain have better survival. However, their cardiovascular risk is uncertain. The aim of this study was to investigate the relationship between weight changes and the progression of coronary artery calcification (CAC) in CKD.

Methods: This study analyzed 763 participants from the KNOW-CKD cohort. Changes in weight at follow-up were categorized as decreased (>2% decrease from baseline), stable (within 2% from baseline) and increased (>2% from baseline). The coronary artery calcium score (CACS) was assessed using cardiac computed tomography at baseline and 4 years after enrolment. The CAC progression was defined as the increase of CACS after 4 years.

Results: The study participants' median CACS was 0.0 [0.0-34.5] and 350 (45.9%) participants had CACS above 0 at baseline. After 4 years, the numbers of patients in each group was 216 (28.3%) in decreased weight, 317 (41.6%) in stable weight and 230 (30.1%) in increased weight. 403 (52.8%) patients had CAC progression. The cumulative incidences of CAC progression were 53.7%, 50.2% and 55.7% in decreased, stable and increased weight groups. The multivariate adjusted ORs (95% CI) for CAC progression compared to stable group were 1.06 (0.69-1.61) and 1.58 (1.03-2.41) in decreased and increased weight groups.

Conclusions: Weight gain after 4 years was significantly and independently associated with CAC progression in Korean predialysis CKD patients. These results suggest that preventing excessive weight gain might help prevent cardiovascular complications in CKD.