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LOW VITAMIN D AS A MODIFYING FACTOR IN THE RELATIONSHIP BETWEEN OBESITY AND VASCULAR CALCIFICATION IN HEMODIALYSIS PATIENTS

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Background: Obesity is a risk factor for increased cardiovascular disease. Whether vitamin D deficiency modifies this association is unclear. Here, we examined the association of obesity and vitamin D deficiency with vascular calcification score (VCS) in incident end-stage renal disease (ESRD) patients.

Methods: A cross-sectional study was conducted with 213 ESRD patients who newly started hemodialysis. Vitamin D deficiency was defined as serum 25-hydroxyvitamin D (25(OH)D) levels below 10 ng/mL, and levels below 3 ng/mL was considered very low. Obesity was defined as a percentage of body fat (PBF) higher than the sex-specific median value in the cohort (>26.8% for men, >36.2% for women). VCS was measured by plain radiographic film of the lateral abdomen in the standing position.

Results: Mean age was 63.7±13.4 years and 31.9% were women. Most ESRD patients (76.6%) had 25(OH)D deficiency at the start of dialysis, and 44.7% of them had very low levels of 25(OH)D. The prevalence of 25(OH)D deficiency was much higher in obese patients than non-obese patients, and it had significant inverse association with PBF ($r=-0.315$, $p<0.001$). Abdominal aortic calcification was identified in 104 (48.9%) patients. VCS was significantly higher in obese population: 2.6 (0-23) for all patients, 4.2 (0-23) for obese and 1.0 (0-12) for non-obese patients ($p<0.001$). Interestingly, serum 25(OH)D affected the relationship between obesity and the risk of vascular calcification, such that vitamin D deficiency was associated with greater risk of a high VCS, especially in obese population [odds ratio (OR) 3.02, 95% confidence interval (CI) 1.09-9.38], but not with non-obese patients (OR 1.82, 95% CI 0.56-5.60).

Conclusion: The magnitude and direction of the association between obesity and the risk of vascular calcification may depends on an individual's 25(OH)D level, a possible representative marker of cardiometabolic disturbance in ESRD patients.

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