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Associations of Obesity, Sarcopenia, and Sarcopenic Obesity with Chronic Kidney Disease Development in the Elderly Population

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Objectives : Previous studies indicate that sarcopenia and obesity increase the risk of chronic kidney disease (CKD) in middle-aged populations. The relationship between sarcopenic obesity and CKD incidence in older populations is insufficiently explored.
Methods : Elderly individuals aged over 65 with preserved kidney function among UK Biobank participants were examined. The individuals were categorized based on the presence of sarcopenia and obesity, with sarcopenia defined by hand grip strength. Obesity was defined as BMI >30 kg/m², and sarcopenic obesity was identified in those with concomitant obesity and sarcopenia. The development of CKD was determined using ICD-10 codes in claim and death register records.
Results : A total of 62,735 individuals were assessed, with a mean age of 66.9±1.5 years and 44.3% being male. Sarcopenia was identified in 8,648 individuals (13.8%), while obesity was present in 13,075 individuals (20.8%), resulting in a 3.29% prevalence of sarcopenic obesity. Over a median follow-up of 13.3 years, 5,567 participants (8.9%) developed CKD. Incident CKD rates were 7.8% in non-obese without sarcopenia, 9.5% in obese without sarcopenia, 11.7% in non-obese with sarcopenia, and 14.7% in obese with sarcopenia. Compared to non-obese without sarcopenia, HRs and 95% CIs were 1.26 (1.16-1.37) in obese without sarcopenia, 1.55 (1.45-1.65) in non-obese with sarcopenia, and 2.02 (1.80-2.27) in obese with sarcopenia. After adjusting for confounding factors, the risk of CKD development in the obese without sarcopenia was comparable to the non-obese without sarcopenia (HR, 1.07, 95% CI, 0.99-1.15). However, elevated risk persisted in participants with sarcopenia and was most accentuated in those with sarcopenic obesity (non-obese with sarcopenia; HR, 95% CI, 1.22 [1.11-1.34]; obese with sarcopenia, 1.32 [1.15-1.50]).
Conclusions : Sarcopenia, not obesity, was significantly associated with an increased risk of CKD development in elderly individuals, with sarcopenic obesity showing the highest risk elevation for incident CKD in this group.