Resistin, Glomerular Filtration Rate, and Insulin Resistance

To the Editor:

The recent article by Ellington et al.1 showed a significant inverse relationship between circulating resistin levels and estimated glomerular filtration rate (eGFR) in hypertensive adults without cardiovascular disease. This association was independent of markers for insulin resistance and inflammation, suggesting that the association between resistin and eGFR is mediated through processes other than the metabolic or proinflammatory effects of resistin, at least in part. A similar inverse association has also been reported in patients with chronic kidney disease.2,3 It was postulated that the elevated circulating resistin level may result from the reduced renal resistin clearance, and higher plasma resistin was not related to insulin resistance in patients with chronic kidney disease.2,3 In the report by Ellington et al.,1 however, the question of whether the plasma level of resistin is related to insulin resistance after adjustment for eGFR was not addressed. In our Japanese community-based, middle-aged-to-elderly subjects (n=323; 68±8 years old) without evident renal disease (serum creatinine: 0.7±0.1 [0.4 to 1.4] mg/dL), we also found a significant and inverse correlation between plasma log resistin and log eGFR (r=−0.313; P<0.001), calculated according to the formula provided from the Japanese Society of Nephrology (175×serum creatinine−1.134×age−0.203×0.741 [×0.742 for women]). In a multiple regression analysis for eGFR, plasma resistin (β=−0.277; P<0.001) was the most powerful determinant in addition to age (β=−0.122; P=0.034), male sex (β=−0.145; P=0.016), and current smoking (β=0.114; P=0.039), independent of markers for insulin resistance (homeostasis model assessment insulin resistance index: β=0.050; P=0.453) and inflammation (high sensitive C-reactive protein: β=−0.067; P=0.233). This observation further supports the findings of Ellington et al.1 and likely rules out potential ethnic differences. In contrast, plasma resistin was a significant determinant for homeostasis model assessment insulin resistance index (β=0.111; P=0.023) in addition to a number of metabolic parameters, including body mass index (β=0.306; P<0.001), high-density lipoprotein cholesterol (β=−0.189; P=0.001), presence of hypertension (β=0.105; P=0.027), and type 2 diabetes (β=0.303; P<0.001). This association was independent of eGFR (β=0.036; P=0.453). These results indicate that assessments of the clinical implications of resistin level need to take renal function into account. In general populations without chronic kidney diseases, however, plasma resistin reflects insulin resistance status independent of renal function.

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Disclosures

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