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 \(^{-1.134} \times \text{age} ^{-0.207} \times 0.741 \times (0.742 \text{ for women})\)). In a multiple regression analysis for inverse relationship between circulating resistin levels and estimated glomerular filtration rate (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.

Sources of Funding

This study was supported by a research promotion award of Ehime University.

Disclosures

None.

Yasuharu Tabara
Department of Basic Medical Research and Education
Ehime University Graduate School of Medicine
Toon, Ehime, Japan

Michiya Igase
Department of Geriatric Medicine
Ehime University Graduate School of Medicine
Toon, Ehime, Japan

Haruhiko Osawa
Hideichi Makino
Department of Molecular and Genetic Medicine
Ehime University Graduate School of Medicine
Toon, Ehime, Japan

Tetsuro Miki
Katsuhiko Kohara
Department of Geriatric Medicine
Ehime University Graduate School of Medicine
Toon, Ehime, Japan


Resistin, Glomerular Filtration Rate, and Insulin Resistance
Yasuharu Tabara, Michiya Igase, Haruhiko Osawa, Hideichi Makino, Tetsuro Miki and Katsuhiko Kohara

Hypertension. 2008;51:e11; originally published online December 24, 2007; doi: 10.1161/HYPERTENSIONAHA.107.102046

Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2007 American Heart Association, Inc. All rights reserved.
Print ISSN: 0194-911X. Online ISSN: 1524-4563

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://hyper.ahajournals.org/content/51/2/e11

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Hypertension can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Hypertension is online at:
http://hyper.ahajournals.org//subscriptions/