

사구체여과율 산출공식에 대한 한국인 유효상수의 확인

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Validation of Korean Coefficient for GFR Estimation by the Modification of IDMS MDRD Equations

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Background: Race and ethnicity are important determinants of estimating glomerular filtration rate (GFR). Korean coefficients for the isotope dilution mass spectrometry (IDMS) Modification of Diet in Renal Disease (MDRD) equations were developed in 2010, however, those coefficients have not been validated thoroughly yet. In the present study, we validated performance of Korean coefficients for IDMS MDRD equations from the development study data, and derived new Korean coefficients for more accurate GFR estimation using both development and validation study data.

Methods: Equation development and validation were performed in separate groups (development group; N=147 from 2008 to 2009, validation group; N=125 from 2010 to 2012). We compared the performance of IDMS MDRD equations and modified equations with Korean coefficients. And the performance was assessed by correlation coefficient, bias, and accuracy between estimated GFR (eGFR) and reference GFR (rGFR; systemic inulin clearance with a single injection method).

Results: We found strong correlation between eGFR calculated by modified equations with Korean coefficients and rGFR ($r=0.89$ and 0.89 for modified 4 and 6 variable IDMS MDRD equation, $p<0.001$, $p<0.001$, respectively), but it was not different from the correlation coefficients between eGFR calculated by original IDMS MDRD equations and rGFR. Despite the modified equations with Korean coefficients performed with less bias than original IDMS MDRD equations, overall performance was not significantly different from each other showing a similar accuracy. New Korean coefficients for 4 and 6 variable IDMS MDRD equations were 1.02046 and 0.97300, respectively. The overall performance of new Korean IDMS MDRD equations was not different from original IDMS MDRD equations, either.

Conclusion: Korean coefficients for IDMS MDRD equations developed before showed good performance in the validation study group. And the new Korean coefficients for 4 and 6 variable IDMS MDRD equations using both development and validation data were 1.02046 and 0.97300. There was no significant difference between each original and modified IDMS MDRD equation with new Korean coefficient in terms of performance of GFR estimation after all.

Key Words: 사구체여과율, 산출공식, 한국인 유효상수

Glomerular filtration rate, Equation, Korean coefficient