

## 신이식 공여자에서 이식 전 후 신기능 예측에 대한 CKD-EPI와 MDRD 공식간의 유용성 비교

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### Comparison of the Usefulness between CKD-EPI and MDRD Equation in the Estimation of Renal Function before and after Kidney Donation in Kidney Donors

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**Background:** The aim of this study is to investigate the usefulness of the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) formula to predict renal function in subject in kidney donor before and after kidney transplantation.

**Methods:** We analyzed the CKD-EPI formula in comparison to Modification of Diet in Renal Disease (MDRD) equation in 207 potential kidney donors before KT and 71 donors after kidney donation. Correlation, bias, precision and accuracy within 30% of measured GFR (mGFR) were determined. mGFR was measured by technetium-diethylenetriamine pentaacetic acid (99mTc-DTPA) clearance.

**Results:** Before kidney donation, both of the results of MDRD and CKD-EPI equations correlated well with GFR (0.49; 0.52, respectively). eGFR calculated by MDRD underestimated mGFR significantly ( $100.7 \pm 20.4$  vs.  $110.3 \pm 20.7$  mL/min/1.73m<sup>2</sup>,  $p < 0.01$ ). In contrast, eGFR calculated by EPI ( $108.7 \pm 18.0$  mL/min/1.73m<sup>2</sup>) did not showed significant differences to mGFR ( $p = 0.23$ ). Accuracy within 30% of mGFR was higher for CKD-EPI (91.8%) compared to MDRD (84.1%) ( $p < 0.01$ ). After kidney donation, remained kidney showed significantly higher GFR compared to before kidney donation. ( $58.1 \pm 10.3$  vs.  $78.8 \pm 15.7$  mL/min/1.73m<sup>2</sup>,  $p < 0.01$ ). Both of the results of MDRD and CKD-EPI correlated well with mGFR, the correlation coefficient was lower in EPI (0.48; 0.27, respectively). MDRD equation underestimate mGFR ( $71.9 \pm 14$  vs.  $78.8 \pm 15.7$  mL/min/1.73m<sup>2</sup>,  $p < 0.01$ ), but eGFR calculated by CKD-EPI ( $76.9 \pm 21.2$  mL/min/1.73m<sup>2</sup>,  $p = 0.951$  vs. mGFR) did not show significant differences compared to mGFR. However, the accuracy of the CKD-EPI (67.6%) within 30% of mGFR was lower than the accuracy of the MDRD equation (83.3%) ( $p < 0.01$ ).

**Conclusion:** In potential kidney donor, the healthy population, CKD-EPI equation showed better performance compared to MDRD equation to predict mGFR. However, after kidney donation, in uninephrectomy state, it was inferior to MDRD equation to predict mGFR.

**Key Words:** 사구체 여과율, 신이식 공여자, CKD-EPI, MDRD  
Glomerular filtration rate, Kidney donor, CKD-EPI, MDRD