

## 신장이식 공여자에서 신장 크기 예측 방법에 대한 비교

가톨릭대학교 의과대학 내과학교실

황현석 · 형복진 · 이소영 · 전연주 · 윤혜은 · 강석휘 · 정병하 · 박철휘 · 양철우 · 김용수 · 최범순

### Comparison of Methods to Estimate Kidney Size in Kidney Transplantation Donors

Hyeon Seok Hwang, Bok Jin Hyung, So Young Lee, Youn Joo Jeon, Hye Eun Yoon  
Seok hui Kang, Byung Ha Chung, Cheol Whee Park, Chul Woo Yang, Yong Soo Kim, Bum Soon Choi

Departments of Internal Medicine, College of Medicine, The Catholic University of Korea, Seoul, Korea

**Purpose** : The kidney size is important for kidney donor evaluation and prediction of graft outcome. This study was performed to determine the usefulness of body index and prediction of radiological methods for actual kidney size.

**Methods** : From February 2007 to August 2008, fifty-nine living kidney donors were enrolled. The actual sizes of donor kidneys were obtained after nephrectomies for transplantsations, and single kidney glomerular filtration rate (SKGFR) was estimated from technetium-99m diethylenetriaminepentaacetic acid (99mTc DTPA) renal scintigraphy. For estimation of kidney sizes, kidney length was measured by ultrasonography (US) and computed tomography (CT), and kidney volumes by CT using ellipsoid and disc-summation method. The correlation coefficients of kidney weights with body index and estimated kidney sizes were calculated. The SKGFR was also compared with estimated kidney sizes for its correlation degree.

**Results** : Normal adult kidneys were  $11.2 \pm 0.8$  cm long,  $6.2 \pm 0.8$  cm wide,  $5.0 \pm 0.6$  cm thick and weighed  $192.0 \pm 30.8$  g. Correlation coefficients between actual kidney weight and body surface area, body mass index, body weight and total body water content were 0.505 ( $p < 0.001$ ), 0.535 ( $p < 0.001$ ), 0.542 ( $p < 0.001$ ) and 0.567 ( $p < 0.001$ ) respectively. For estimated kidney sizes to actual kidney weights, correlation coefficients were 0.194 ( $p = 0.140$ ), 0.524 ( $p < 0.001$ ), 0.736 ( $p < 0.001$ ), and 0.847 ( $p < 0.001$ ) in length by US, length by CT, volume by ellipsoid method and volume by disc-summation method, respectively. Correlation coefficients between estimated GFR and length by US, length by CT, volume by ellipsoid method and volume by disc-summation method were 0.260 ( $p = 0.004$ ), 0.359 ( $p < 0.001$ ), 0.435 ( $p < 0.001$ ), and 0.485 ( $p < 0.001$ ), respectively.

**Conclusion** : Our data suggested that total body water is useful to estimate kidney weight, and kidney volume by CT, disc-summation method is more valuable predictor for actual renal mass and SKGFR than other radiological methods.

**Key Words** : 실제 신장 크기, 신체 용적 지수, 방사선학적 측정  
Actual kidney size, Body index, Radiological methods