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다중 검출기 컴퓨터 단층 촬영을 이용한 정상 한국 성인 남성의 신장 부피의 측정

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Measurement of Kidney Volume with Multi-detector Computed Tomography Scanning in Young Man of Korea

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Background : Kidney volume is widely regarded as the most precise indicator of kidney size. However, it is not widely used clinically as its measurement is difficult due to the complex kidney shape. Recent reports show that multi- detector computed tomography (MDCT) is very precise and useful for measuring kidney volume. We intended to use MDCT to evaluate the normal kidney volume in young Korean men.

Method : We retrospectively reviewed MDCT data of (113 patients) young Korean men. After data processing, we measured the volume and length of the kidneys. Body parameters (height, body weight, body- surface area, and total body water) and laboratory data were collected. Glomerular filtration rate (GFR) was calculated using simplified Modification of Renal Disease (MDRD) equation. We evaluated the relationship between the kidney size (volume and length) and body parameters, and the ability of the kidney size to predict renal function.

Result: The mean kidney volumes were 205.29±36.81 cm^3; and mean kidney length, 10.80±0.69 cm. The former significantly correlated with height, body weight, body- surface area, and total body water ($p<0.05$, correlation coefficient = 0.328, 0.649, 0.640, and 0.638, respectively). The latter also significantly correlated with all body indexes, but the correlation was weaker, except that with height ($p<0.05$, correlation coefficient = 0.457, 0.473, 0.505, and 0.503, respectively). Only kidney volume significantly predicted GFR ($p<0.05$).

Conclusion : The kidney volume measured with MDCT is well correlates with body parameters, and is useful to predict renal function.

Key Words : 신장 부피, 신장 크기, 컴퓨터 단층 촬영
Kidney volume, Renal size, Computed tomography