S-E1

시스타틴 C를 이용하여 사구체 여과율을 추정하는 공식 중, 만성 신부전을 앓고 있는 한국인에게 가장 적합한 공식은 무엇인가?

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Which is the Best Equation for the Estimating Glomerular Filatration Rate Using Serum Cystatin C?

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Introduction: Serum cystatin C is a promising marker of glomerular filatration rate (GFR), and several studies reported that, it could replace serum creatinine, as well as a prognostic marker for prediction of adverse outcomes. However, proposed equation for estimating serum cystatin C based GFR are various, and calculated eGFR results are also different according to the equation used.

This study is aimed to find out the suitable equation for cystatin C based GFR estimation, in chronic kidney disease (CKD) patients.

Methods: Serum cystatin C and creatinine levels were measured in 515 CKD patients, during the period of January 2011 to December 2011. Patients with extremely high eGFR (eGFR >130 ml/min/1.73m^2 by MDRD equation) and, ESRD patients on maintenance dialysis were excluded. Reference GFR was defined as a creatinine based eGFR using four variable Korean coefficient-MDRD equation and, CKD stage was classified as the K/DOQI guideline. In all the patients, cystatin C based eGFR was calculated using the 6 different equation; methods by Larsson, Hoek, Filler, Le Bricon, Orebro-cyst (DAKO) and Orebro-cyst (Gentian).

Comparison between cystatin C based eGFR and MDRD eGFR were analyzed by paired t-test, pearson correlation test and Altman-Bland plot.

Results: A total of 515 patients were enrolled in this study, and the number of enrolled patients according to CKD stage was as follows; CKD1 (N=168), CKD2 (N=140), CKD3 (N=137), CKD4 (N=57), CKD5 (N=13). Their mean ages were 53.26±14.21 years, and male was 55.4%. The mean eGFR calculated by MDRD equation was 70.69±32.05 ml/min/1.73m^2. Most suitable cystatin C based eGFR equation was different according to the CKD stage. In CKD 1 to 3, Filler methods [GFR=91.62×ScytC-1.123 (ml/min/1.73m^2)] showed best accuracy (75.17±28.26 ml/min/1.73m^2 in MDRD, 74.77±28.26 ml/min/1.73m^2, p=0.622, bias=0.39±16.09) and Orebro-cyst(gentian) [GFR=100/ScytC-14 (ml/min/1.73m^2)]showed highest accuracy in CKD4, 5 patients (21.11±6.11 ml/min/1.73m^2 in MDRD, 19.79±10.84 ml/min/1.73m^2, p=0.264, bias=1.32±9.77).

Conclusion: Among the various cystatin C based eGFR equation, results from Filler's method was more accurate in early stage CKD (CKD1, 2, 3) patients and Orebro cyst(gentian) was more accurate than others in advanced CKD patients (CKD4, 5).

Key Words: 시스타틴, 사구체 여과율, 만성 신부전
Cystatin C, Glomerular filtration rate, Chornic kidney disease