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Neurogenic bladder and chronic kidney disease in spinal cord injury patients

Hye Min Choi

Seonam University School of Medicine, Republic of Korea

Background: It is believed that patients with neurogenic bladder (NB) have a significantly higher risk of developing chronic kidney disease (CKD) than the general population. However, data are limited except a few studies that examined the incidence of renal failure in spina bifida or myelomeningocele in pediatric patients. In addition, serum creatinine is not a reliable marker for renal function in NB patients because they present muscle wasting due to disuse or denervation. We examined the prevalence of CKD in NB patients from spinal cord injury using biomarker cystatin-C, and the risk factors for progression to CKD.

Methods: This was a cross sectional study in Korea workers' compensation & welfare Hospital, which is a specialized center for patients from industrial accident. Patients with NB were under regular examination including regular laboratory test and urologic study such as urodynamic study, Sonography and voiding cystourethrography. Patients who visited urology department for routine check-up underwent additional measurement of serum cystatin-C for 3 months.

Results: Serum cystatin-C was checked in 314 patients (mean age 58.1 ± 8.8 yr, mean time period after injury 18.9 ± 9.3 yr). Detrusor hyperreflexia and areflexia accounted for 66.0% and 22.2%, respectively. The overall prevalence of CKD, defined as estimated glomerular filtration rate (eGFR) < 60 ml/min/1.73m² was 22.4% and 8.0% by cystatin-C and creatinine-based CKD-EPI equation, respectively, and was greater than in age-matched general population (Korean National Health and Nutritional Examination Surveys). Initial eGFR, co-morbid diabetes, proteinuria, bladder volume and the presence of recurrent urinary tract infection (UTI) were the independent risk factors for CKD development in the multivariable analysis while different bladder emptying modalities was not significantly associated.

Conclusions: The prevalence of CKD is higher in NB patients than in the general population and cystatin-C was more sensitive than creatinine for detecting CKD in NB patients. Co-morbid diabetes, proteinuria, bladder volume and the presence of recurrent UTI seem to be the important risk factors for development of CKD in NB patients.

Biography

Hye Min Choi has completed her M.D. and Ph.D. at Korea University School of Medicine. She has completed her residency in the department of Internal medicine from Korea University hospital, and worked as a basic science researcher in the department of Internal medicine of Michigan University in US between 2008~2009. After finishing the fellowship in the division of Nephrology of Korea University, now she works as an assistant professor in Seonam University Medical School Myongji Hospital in Korea.

lriver@hanmail.net