

Prevalence of risk factors for contrast-induced nephropathy in patients undergoing contrast-enhanced computed tomography in Korea

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PURPOSE: This study evaluated the prevalence of contrast induced nephropathy (CIN) risk factors among patients who underwent contrast enhanced computed tomography (CECT), and describes preventive care for CIN in 19 Korean teaching hospitals in 2008.

MATERIALS AND METHODS: A data extraction protocol for standardizing data collection from electronic medical records (EMR) was developed using Korean Health Insurance Review and Assessment Serviceclaim codes, which are used by all participating hospitals. Patients with CECT codes during 2008 were identified in EMR, and data on demographics, comorbidities, prescriptions, and laboratory test results of patients were collected following the data extraction protocol. Most recent serum creatinine (SCr) within the 14 days before each CECT was used as baseline SCr; highest SCr within the 3 days after the CECT was used to determine the incidence of CIN. CIN was defined as an absolute increase in SCr of 0.5 mg/dL after CECT or 25% increase from baseline SCr. We described the participants' characteristics using the Student's t-test and chi-squared test as appropriate, and assessed the prevalence of risk factors based on CECT and patients as appropriate. We evaluated the influence of risk factors on the incidence of CIN using the generalized estimating equation.

RESULTS: We pooled 432,425 CECTs of 272,136 patients from 13 hospitals. After exclusion of CECTs without SCr measures and patients below age 15, 142,819 CECTs of 102,649 patients were included in final analysis. The mean age of participants was 56.9 ± 16.1 , 24.3% of patients were older than 70, and 55% were male. The prevalence of diabetes mellitus was 11.0%, hypertension 13.8%, gout 0.6%, and heart failure 1.8%. Serum creatinine ≥ 1.4 mg/dL was in 5,201 CECTs (5.1%), and the estimated glomerular filtration rate ≤ 60 mL/min/1.73 m² was in 31,498 CECTs (22.8%). In the multivariate analysis, chronic kidney disease, abnormal baseline serum creatinine, diabetes mellitus, male gender, and heart failure were statistically significant risk factors for CIN.

CONCLUSION: The prevalence of the risk factors was not negligible; thus the systematic delivery of preventive care is necessary.