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Does the incidence of dementia increase after general anesthesia in patients with chronic kidney disease? : A Nationwide Population-Based Cohort Study

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Objectives: Patients with chronic kidney disease (CKD) were regarded as increasing the risk of cognitive dysfunction according to kidney function. However, little is known about the relation of intraoperative aspect for CKD patients with general anesthesia.

Methods: A population-based prospective cohort study was conducted using the Korean National Health Insurance Service-National Sample Cohort database, including CKD from Jan 2002 and Dec 2015. The primary outcome was the incidence of dementia using receipt of medication such as donepezil, rivastigmine, galantamine, and memantine. Time-varying Cox regression analysis was applied for risk factor analysis of incident dementia.

Results: We excluded 59 of the 10,019 patients with CKD who had already been diagnosed with dementia prior to surgery with general anesthesia. Among these patients, only 9,035 patients over 18 years of age were included in the final analysis. The 154 of the 3,616 participants of general anesthesia groups had developed newly dementia after surgery (4.26%). Of the 5,419 control groups that had CKD but did not have general anesthesia, 315 participants had presented incident dementia (5.81%). In time-varying Cox regression analyses revealed that general anesthesia group increase the development of dementia in CKD patients, compare to control group (HR 1.306, 95% CI 1.065-1.602) after adjustment of age, sex, health security certification, cerebrovascular disease, quintile group for health care visit frequency and Charlson comorbidities index (CCI) score. Female sex, old age, cerebrovascular disease, and high CCI score were an independent risk factor of incident dementia in CKD patients, irrespective of anesthetic methods.

Conclusions: In CKD patients, general anesthesia operation increase the risk of incident dementia. Subgroup analysis was warranted, especially in type of operation and anesthetic agent in advanced CKD, including dialysis.