Journal of the Neurological Sciences 397 (2019) 80

Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Letter to the Editor

Estimated glomerular filtration rate and incident stroke in patients with hypertension and/or diabetes

ARTICLE INFO

Keywords:
Estimated glomerular filtration rate
Stroke
Hypertension
Diabetes

Dear Editor,

Sarfo et al. conducted a prospective study to evaluate the effect of estimated glomerular filtration rate (eGFR) on incident stroke in patients with hypertension and/or type 2 diabetes mellitus [1]. The authors had reported the risk factors of incident stroke in patients with hypertension and/or type 2 diabetes mellitus by using the same database [2]. They recognized 54 events of stroke and stroke incidence rates increased with decreasing eGFR. Adjusted hazard ratios (HRs) (95% confidence intervals [CIs]) of eGFR with 60–89 ml/min, 30–59 ml/min, and < 30 ml/min against eGFR with > 89 ml/min for incident stroke were 1.42 (0.63–3.21), 1.88 (1.17–3.02), and 1.52 (0.93–2.43), respectively. I have two concerns about this study.

First, the authors concluded that chronic kidney disease (CKD) was dose-dependently associated with incident strokes in patients with hypertension and type 2 diabetes mellitus. But caution should be paid to the significance of the association. HR of eGFR with 30–59 ml/min only presented significant increase, and small number of vents would partly lead to the lack of statistical power by Cox proportional hazard regression analysis. There are reports that the number of events per independent variable (EPV) should be kept ≥10 to keep stable estimates [3,4], and the authors can use 5 independent variables for the analysis. Taken together, continuous survey is needed to increase the number of events.

Second, Losito et al. conducted a prospective study to investigate the association of reduced kidney function, hypertension and diabetes with acute ischemic stroke [5]. Adjusted odds ratio (OR) (95% CI) of eGFR < 60 ml/min, hypertension and diabetes for ischemic stroke were 1.53 (1.30–1.81), 2.77 (2.33–3.28) and 1.30 (1.04–1.63), respectively. There was no additive effect between eGFR, hypertension and diabetes on the risk of stroke. As there is a close relationship among diabetic nephropathy, hypertension, eGFR and albuminuria, progression of type 2 diabetes mellitus and/or hypertension should be comprehensively evaluated for the risk assessment of incident stroke.

Disclosure statement

The author has indicated no financial support.

Conflicts of interest

There is no conflict of interest in this study.

References

[1] F.S. Sarfo, L.M. Mobula, O. Sarfo-Kantanka, S. Adamu, J. Plange-Rhule, D. Ansong, R.A. Gyamfi, J. Duah, B. Abraham, D. Ofori-Adjei, Estimated glomerular filtration rate predicts incident stroke among Ghanaians with diabetes and hypertension, J. Neurol. Sci. 396 (2019) 140–147.
[2] F.S. Sarfo, L.M. Mobula, J. Plange-Rhule, D. Ansong, D. Ofori-Adjei, Incident stroke among Ghanaians with hypertension and diabetes: a multicenter, prospective cohort study, J. Neurol. Sci. 395 (2018) 17–24.
[3] J. Concato, P. Peduzzi, T.R. Holford, A.R. Feinstein, Importance of events per independent variable in proportional hazards analysis. I. Background, goals, and general strategy, J. Clin. Epidemiol. 48 (1995) 1495–1501.
[4] P. Peduzzi, J. Concato, A.R. Feinstein, T.R. Holford, Importance of events per independent variable in proportional hazards regression analysis. II. Accuracy and precision of regression estimates, J. Clin. Epidemiol. 48 (1995) 1503–1510.
[5] A. Losito, L. Pittavini, C. Ferri, L. De Angelis, Reduced kidney function and outcome in acute ischaemic stroke: relationship to arterial hypertension and diabetes, Nephrol. Dial. Transplant. 27 (2012) 1054–1058.

Tomoyuki Kawada
Department of Hygiene and Public Health, Nippon Medical School, 1-1-5 Sendagi, Bunkyo-Ku, Tokyo 113-8602, Japan
E-mail address: kawada@nms.ac.jp.

https://doi.org/10.1016/j.jns.2018.12.033
Received 12 December 2018; Accepted 26 December 2018
Available online 27 December 2018
0022-510X/