

Dietary glycemic load and stroke: what is the need for stable risk assessment on stroke?

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Rossi et al. [5] conducted a cohort study on the effect of dietary glycemic load (GL) on two types of stroke incidence in combination with meta-analysis. They concluded that glycemic load was an important determinant of ischemic stroke, not of the hemorrhagic stroke, although significance was only observed by meta-analysis. I fundamentally agree with their study outcome, although some queries are presented to verify their study.

First concern is the results in their Greece study. The authors included first events, not only non-fatal but also fatal cases. Out of 304 stroke cases, 67 ischemic and 49 hemorrhagic stroke cases were determined, which occupied 38 % of all the cases. As their main result, the hazard ratios (95 % confidence intervals) of the highest to lowest GL tertiles for ischemic stroke and for hemorrhagic stroke were 1.55 (0.72–3.36) and 0.48 (0.18–1.25), respectively. They used Cox proportional hazards regression models by adjusting several potential confounders. The problem is the number of confounders. The authors categorized some of the confounders to use them as independent variables. From the footnote of their Table 2, more than 20 variables were used for the Cox proportional hazards regression models. Peduzzi et al. [2, 4] evaluated the effect of events per independent variable

(EPV) in proportional hazards regression analysis. They concluded that an EPV value <10 results in unstable estimates for keeping the validity of the statistical model. Using this criterion, more than 200 events are needed for the study by Rossi et al.

Second, the authors conducted a meta-analysis in combination with their study outcome in Greece. When pooled relative risks of GL for ischemic and hemorrhagic strokes were observed, GL accelerated the risk for both types of strokes, and statistical significance was recognized in ischemic stroke. Rossi et al. described protective, but not significant, effect of GL on hemorrhagic stroke, and their speculation on the different effect of GL on each type of stroke should be specified. Compared with study by Rossi et al., other studies in the meta-analysis succeeded more than 75 % of classification into ischemic or hemorrhagic stroke. I suppose that dropout information from Rossi et al. would partly contribute to the discrepancy.

Finally, there was a sex difference in two study components in meta-analysis. Oba et al. [3] reported that women showed higher risks of ischemic and hemorrhagic stroke than men. In contrast, Burger et al. [1] reported a different result. Oba et al. conducted a mortality study, and all the studies showed no statistical significance. But lifestyles including smoking and dietary habits differ in women and men, and stratified analysis by sex should also be considered for their analysis.

I have an opinion that incidence and mortality should be separated for the meta-analysis, because the severity of stroke has an important factor for conducting risk assessments. Anyway, further surveys are recommended to confirm the relation between GL and each type of stroke.

Conflict of interest There is no conflict of interest in this study.

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