

5. The association of dietary inflammatory index with long-term all-cause and cardiovascular mortality: NIPPON DATA80

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Background

Dietary inflammatory potential may amplify all-cause and cardiovascular disease (CVD) mortality. However, the association of pro-inflammatory diet with all-cause and cardiovascular mortality is not conclusive yet, because the study with a dietary record method in large size general population was not investigated before. In addition, no previous study controlled salt intake in the association between pro-inflammatory diet with all-cause and CVD mortality, which is important risk factor for these events. Aim of this study was to examine the association of dietary inflammatory index with all-cause and cardiovascular mortality in a long-term follow-up study among a representative Japanese population.

Methods

NIPPON DATA80 is a prospective cohort study of the National Survey on Circulatory Disorders and the National Nutrition Survey conducted in 1980. Participants are residents from 300 districts randomly selected throughout Japan. We excluded those who had missing information, CVD history at baseline, extreme energy intake, and loss to follow-up, leaving 9,284 individuals at baseline (56% women, 30–92 years). Dietary intakes were obtained using weighed dietary record method for each household. Participants weighed and recorded all foods and beverages taken by any family member on 3 consecutive days (excluding weekends and national holidays). For individual-based data, estimates of dietary intakes were calculated by dividing the household data proportionally with average consumption rate by sex and age groups. Pro-inflammatory diet was measured by energy adjusted – Dietary Inflammatory Index (DII). Energy-adjusted was done by residual method. Higher DII score represents pro-inflammatory diet. The cause of death followed-up until 2009. Cox proportional hazards model was performed to calculate hazard ratios (HRs) adjusted for age, sex, smoking status, drinking status, work strength and energy-adjusted salt intake.

Results

There were 3,381 all-cause and 1,149 CVD deaths during a median follow-up of 29 years. The mean of DII score was -0.44 (SD: 1.14). The multivariable-adjusted HR for the highest compared with the lowest quartile of DII was 1.28 (95% CI: 1.16, 1.41) for all-cause mortality, 1.34 (95% CI: 1.13, 1.60) for CVD mortality, 1.61 (95% CI: 1.10, 2.36) for coronary heart disease mortality and 1.47 (95% CI: 1.14 -1.90) for atherosclerotic mortality. The third quartile and the highest quartile of DII for stroke mortality were 1.49 and 1.34.

Discussion

There were positive associations between DII with all-cause and CVD mortality. Our findings appear to be similar with studies using FFQ that conducted in large size general population with follow up of 12 to 19 year. Adjustment of salt intake made associations between DII with CVD and CHD mortality much stronger. Excess salt intake may linked to vascular damage in hypertensive people with higher CRP level. There was non-linear association between DII and stroke mortality, which was observed in other two studies. There may be specific threshold of DII for stroke mortality.

Conclusions

The DII score was positively associated with the long-term risk of all-cause and CVD mortality in a nationally representative Japanese population.

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