

The associations of dietary intake of high sodium and low zinc with gastric cancer mortality: a prospective cohort study in South Korea

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An experimental study reported that zinc and sodium display opposite effects on immune cells such as regulatory T cells (Tregs) and T helper 17 cells (Th17), resulting in a contrary effect on the immune system⁽¹⁾. Thus, the authors suggested that excessive dietary sodium intake and simultaneous low zinc intake may cause an altered immune response. Immune cells also have a pivotal role in regulating tumor progression, and reduced immune cells, such as natural killer cells or Tregs, may worsen gastric cancer (GC) mortality⁽²⁾. In addition, there are differences in the characteristics of cases by histological type of GC (i.e., age of onset, distribution of sex, GC mortality)⁽³⁾. Thus, the influence of dietary factors on histological types of GC may also differ. Therefore, this cohort study investigated the associations between the combination of sodium and zinc intake and GC mortality and whether these associations differ by histological type by following up deaths of GC cases in Korea.

A total of 490 patients with GC were enrolled between 2002 and 2006. The inclusion criteria were as follows: 1) age between 20 and 79 years, 2) diagnosis of GC through endoscopic biopsy and histopathologic examination, and 3) available epidemiological and dietary survey data. Survival or death was prospectively followed up until December 31, 2016. Finally, 300 patients with the two main histological types of GC were included; 99 GC deaths occurred during a median follow-up period of 7.1 years. Nutrient and food intake were assessed using a quantitative food frequency questionnaire (FFQ). We used a slightly modified version of the validated FFQ. The risk of GC mortality was assessed using the Cox proportional hazards regression analysis.

In all patients, high sodium intake showed a significantly higher GC mortality than low sodium intake (hazard ratio [HR] = 1.67, 95% confidence interval [CI] = 1.05–2.65). Patients with high sodium and low zinc intake had a significantly higher GC mortality than those with low sodium and high zinc intake (HR, 2.07; 95% CI, 1.09–3.93). However, there was no significant difference between the combination of sodium and zinc intake with GC mortality according to the histological type.

We found that a combination of high sodium and low zinc intake may worsen the survival rate of patients with the main histological type of GC. Thus, we suggest that intake of low sodium and high zinc (e.g., nuts such as walnuts, peanuts, and pine nuts) may be helpful in improving the survival rate of patients with GC.

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