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Prediagnostic plasma vitamin C and risk of gastric adenocarcinoma and esophageal squamous cell carcinoma in a Chinese population.

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Abstract

BACKGROUND:

China has some of the highest incidence rates for **gastric adenocarcinoma (GA)** and **esophageal squamous cell carcinoma (ESCC)** in the world. **Prospective studies suggested that vitamin C may reduce risks**; however, associations are unclear because of limited sample size.

OBJECTIVE:

The objective was to examine the relation between prediagnostic plasma vitamin C and the risk of GA and ESCC.

DESIGN:

A case-cohort study was used to assess the association between prediagnostic plasma vitamin C and incidence of GA (n = 467) and ESCC (n = 618) in the General Population Nutrition Intervention Trial. With the use of multivariate Cox proportional hazards models, we estimated the HRs and 95% CIs. We also conducted a meta-analysis of the literature up to 1 October 2012 on the relation between circulating vitamin C and gastric cancer incidence. Two cohort studies and the current study were included to assess the body of evidence.

RESULTS:

For GA, each 20- $\mu\text{mol/L}$ increase in plasma vitamin C was associated with a 14% decrease in risk (HR: 0.86; 95% CI: 0.76, 0.96). Compared with individuals with low plasma vitamin C concentrations ($\leq 28 \mu\text{mol/L}$), those with normal concentrations ($> 28 \mu\text{mol/L}$) had a 27% reduced risk of GA (HR: 0.73; 95% CI: 0.56, 0.94). No association between vitamin C concentrations and ESCC was seen. **Meta-analysis showed that the risk of incident GA among those with the highest concentration of plasma vitamin C was 31% lower (random-effects-pooled-odds ratio 0.69; 95% CI: 0.54, 0.89) than those in the lowest category.**

CONCLUSION:

Our data provide evidence that higher circulating vitamin C was associated with a reduced risk of incident GA, but no association was seen for ESCC.