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Associations between dietary vitamin D, calcium and dairy products intakes and colorectal cancer risk: a case-control study in China

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Abstract

Introduction The effect of dietary vitamin D, calcium and dairy products intake on colorectal cancer risk is controversial. This study aims to investigate the associations between dietary vitamin D, calcium, dairy products intake and colorectal cancer risk among Chinese population.

Materials and Methods During July 2010 to December 2018, 2380 incident, first primary, histologically confirmed colorectal cancer cases and 2389 sex and age-matched (5-year interval) controls were recruited. Dietary intake information was collected by face-to-face interviews using a validated food frequency questionnaire. Energy and other nutrient intakes such as dietary calcium were computed on the basis of the 2002 Chinese Food Composition Table, and the dietary vitamin D intake was calculated according to the United States Department of Agriculture Food Composition Database. Unconditional multivariable logistic regression models were used to calculate the odds ratios (ORs) and 95% confidence interval (CI) after adjusting for various confounders, including socio-demographic characteristics, lifestyle factors, BMI, family history of cancer, energy intake and several nutrient intakes.

Results The energy-adjusted mean dietary vitamin D, calcium and total dairy products intakes were 5.69 µg/d, 406.94 mg/d, 4.02 g/d for cases and 6.81 µg/d, 468.21 mg/d, 9.50 g/d for controls. Compared with the controls, cases had a lower intake of dietary vitamin D, calcium and total dairy ($P < 0.001$). A higher intake of dietary vitamin D and calcium was found to be associated with 43% and 51% reduction in colorectal cancer. The ORs of the highest quartile compared with the lowest quartile intake were 0.57 (95% CI: 0.46, 0.70, $P_{trend} < 0.001$) for dietary vitamin D and 0.49 (95% CI: 0.39, 0.61, $P_{trend} < 0.001$) for dietary calcium. We observed a statistically significant inverse association of dairy products intake with colorectal cancer risk. Compared with the lowest tertile, the adjusted ORs for the highest tertile were 0.31 (95% CI: 0.26, 0.38, $P_{trend} < 0.001$) for total dairy. The inverse associations of dietary vitamin D, calcium and dairy products intakes with colorectal cancer risk were observed in both men and women, colon and rectal cancer.

Conclusion Our study indicated that higher dietary vitamin D, calcium and dairy products intakes were associated with a lower colorectal cancer risk.

Conflict of Interest

There is no conflict of interest.