Vegetable Consumption and Bladder Cancer Risk: a Pooled Analysis of Individual Patient Data of Six Cohort Studies

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Abstract

Background

Studies investigating the association between dietary factors and bladder cancer (BC) risk have reported inconsistent results, which may have been influenced by sex and smoking status. Inconsistencies in the published research may be overcome by a pooled analysis of individual patient data. Our aim was to investigate the association of vegetable intake, both total and individual vegetable consumption, on the risk of BC stratified by sex and smoking status.

Methods

The BLadder cancer, Epidemiology and Nutritional Determinants (BLEND) study collected individual patient data on vegetables from 4,143 bladder cancer cases and 655,505 non-cases from 6 cohort studies. The association of vegetables on the risk of bladder cancer was estimated by calculating odds ratios (ORs) and 95% confidence intervals (CIs) using a one step multilevel mixed-effects logistic regression model adjusted for age, sex and smoking.

Results

We observed an inverse trend in BC risk with greater intake of total vegetables: each extra daily portion of vegetables was associated with a lower risk of BC by 6% (OR=0.94 (95%CI 0.92,0.96)). This risk reduction was stronger for women (OR=0.94 (95%CI 0.91,0.97)) than for men (OR=0.96 (95%CI 0.94,0.99)) and most pronounced for current smokers (OR=0.92 (95%CI 0.88,0.95)) in contrast with never smokers (OR=0.98 (95%CI 0.94,1.02)).

Conclusion

In this pooled analysis we found a consistent decrease in BC risk with each daily portion of total vegetables. We also observed differences in these trends by gender and smoking status.

Keywords

Bladder cancer, diet, vegetables, risk, pooled analysis, individual patient data