

Bread and Pasta Increase Italian Kidney Cancer Risk

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MILAN, Italy, Oct. 20 -- Two major players in the Italian kitchen -- bread and pasta -- may increase the risk of renal cell carcinoma, according to a large case-control study here.

Increased consumption of bread almost doubled the risk of kidney cancer while pasta and rice contributed a more modestly increased risk, albeit not significant, found Francesca Bravi, M.D., of the Institute of Pharmacological Research Mario Negri here, and colleagues.

Vegetables, whether cooked or raw, significantly reduced the risk of renal cell carcinoma, they reported online in the *International Journal of Cancer*.

Previous studies have linked diet and nutrition to kidney cancer, but the role of specific foods or nutrients has been unclear and controversial, Dr. Bravi and colleagues said. They suggested that the mechanism may be related to how the starchy foods affect blood sugar levels.

"As for other common cancers, the increased risk of renal cell carcinoma for elevated cereals intake may be due to the high glycemic index of these foods, and their possible involvement in insulin-like growth factors," the investigators wrote.

The researchers compared food intake in patients hospitalized with renal cell carcinoma to that of age- and gender-matched controls in the same hospitals for other reasons.

The study included 767 patients (494 men and 273 women) younger than 79 with incident, histologically confirmed renal cell carcinoma and 1,534 controls (988 men and 546 women) admitted to the same hospitals in four areas across Italy. During the hospital stays, interviewers administered a questionnaire on sociodemographics, lifestyle habits, and family history of cancer in first-degree relatives. Dietary questions were for the two years prior to cancer diagnosis or hospital admission for controls.

Chronic conditions, which may have caused individuals to make long-term diet modifications, were excluded as were cancers of the renal pelvis and ureter. The risk of renal cell carcinoma was adjusted for period of interview, years of education, family history of kidney cancer in first-degree relatives, tobacco smoking, alcohol drinking, body mass index, and total energy intake.

The two groups were similar except that those in the cancer group smoked more, had higher body mass indices, more education, and more frequently reported first-degree relatives with kidney cancer.

The researchers found a significant association between higher bread intake and the likelihood of having renal cell carcinoma (OR 1.94 for the highest versus the lowest intake quintile, $P=0.0002$ for trend).

A more modest excess risk, though not significant, was discovered for pasta and rice and kidney cancer risk (OR 1.29, 95% CI 0.95 to 1.76, $P=0.06$ for trend).

The risk increased for each additional daily serving. The findings were:

Bread (odds ratio 1.10, 95% confidence interval 1.04 to 1.16), and

Pasta and rice (OR 1.43, 95% CI 1.04 to 1.96).

However, another important source of dietary starch, potatoes, did not significantly increase risk, though the authors noted that potatoes' risk estimates were "compatible with a modest increased risk." The same was true for milk and yogurt (OR 1.27, 95% CI 0.95 to 1.70, $P=0.11$ for trend).

Vegetables significantly decreased the risk of renal cell carcinoma. The researchers reported an inverse trend for:

All vegetables (OR 0.65, 95% CI 0.47 to 0.90, $P=0.003$ for trend),

Raw vegetables (OR 0.74, 95% CI 0.53 to 1.02, $P=0.007$ for trend), and

Cooked vegetables (OR 0.68, 95% CI 0.50 to 0.91, $P=0.01$ for trend).

"The beneficial effect of vegetables may be related to their content of vitamins, micronutrients or food constituents, such as carotenoids, flavonoids and phytosterols, known to have antioxidant and anticancerogenic properties," the investigators wrote.

Although some previous studies reported increased risk for red meat, the researchers found no association. Other meats actually were found to decrease the risk. The findings were:

Poultry (OR 0.74, 95% CI 0.58 to 0.94, $P=0.008$ for trend), and

Processed meat (OR 0.64, 95% CI 0.45 to 0.90, $P=0.006$ for trend).

"The apparent inverse relation between various sources of proteins on [renal cell carcinoma] observed in this study may be due to selective reduction of protein-rich diets in subjects with kidney or urinary tract diseases," Dr. Bravi and colleagues wrote. They concluded that the effect of meat and other sources of protein on kidney cancer risk remains unclear.

No positive or negative effect was found for coffee, tea, soups, eggs, red meat, fish, cheese, pulses, fruits, desserts or sugars.

Renal cell carcinoma is the most common type of kidney cancer and accounts for about 2% of all cancers in adults. Other known risk factors include tobacco smoking, obesity, family history of kidney cancer and hypertension.

Action Points

Explain to interested patients that according to this case-control study, in a southern European population, dietary habits may affect the risk of renal cell carcinoma.

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Bravi F, et al "Food groups and renal cell carcinoma: A case-control study from Italy" *Int. J. Cancer* 2006.