Gut Compounds Linked to Aggressive Prostate Cancer

Study findings have implications for both diagnosis and prevention—and even for treatment.

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For the first time, researchers have shown that certain molecules in the gut are associated with an increased risk for lethal prostate cancer.

The results, from a study of nearly 700 men, may have clinical implications for diagnosing, preventing and even treating lethal prostate cancer, according to the study's lead author, Nima Sharifi, MD, director of the Cleveland Clinic's Genitourinary Malignancies Research Center.

The study utilized data from patients previously enrolled in the National Cancer Institute's Prostate, Lung, Colorectal and Ovarian Cancer Screening Trial. Findings were published in Cancer Epidemiology, Biomarkers & Prevention.

Sharifi and colleagues observed baseline levels of particular dietary nutrients and metabolites in patients' blood serum prior to prostate cancer diagnosis. (Metabolites are produced when a substance is broken down in the gut.) These levels were then compared with those of healthy patients and those of patients who later received a prostate cancer diagnosis and died of aggressive prostate cancer.

Men with higher levels lof the metabolite phenylacetylglutamine (PAGln) were two to three times more likely to be diagnosed with lethal prostate cancer. PAGln is produced when gut microbes break down phenylalanine, an amino acid found in protein sources such as meat, beans and soy, according to the Consult QD article.

Likewise, high levels of the nutrients choline and betaine, commonly found in animal products such as red meat, egg yolks and high-fat dairy products, were also linked to an increased risk for aggressive prostate cancer.

Although, as the researchers pointed out, these nutrients and metabolites have been studied extensively with regard to heart disease and stroke, this is the first time gut microbiome metabolites have been investigated in the context of prostate cancer outcomes. Researchers will continue to examine the reliability of choline, betaine and PAGln as biomarkers of aggressive prostate cancer and how dietary interventions may help lower their levels and reduce disease risk.

What’s more, because earlier studies have shown that PAGln binds to the same receptors as beta blockers, medications used to treat high blood pressure, Sharifi told Consult QD, “We will continue to work together to investigate the possible mechanisms linking PAGln activity and prostate cancer disease processes in hopes of identifying new therapeutic targets for our patients.”

To learn more, see "Healthy Lifestyle May Offset Risk of Lethal Prostate Cancer” and “The Microbiome Frontier”.

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