

Genes associated with fat metabolism could increase kidney cancer risk

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A team of international scientists has identified three genes associated with the body's processing of fats that may increase susceptibility to kidney cancer. The findings were presented at the American Association for Cancer Research's Seventh Annual International Conference on Frontiers in Cancer Prevention Research.

The researchers found that variations within three genes associated with lipid peroxidation – the process of breaking down fats and lipids when exposed to oxygen – could increase a person's risk of kidney cancer. Scientists have suspected lipid peroxidation as a unifying mechanism through which risk factors such as obesity, hypertension and smoking could damage kidney tissue and lead to kidney cancer.

"Obesity, hypertension and smoking have been the only established risk factors for kidney cancer, but they account for only 50 percent of cases," said lead author Lee E. Moore, Ph.D., M.P.H., an epidemiologist and investigator at the National Cancer Institute. "Our study suggests that common genetic variation may account for some of the increased risk in the other half of cases. This is the first and largest study of renal cell cancer to evaluate the influence of these genes."

For the study, Moore and a group of international colleagues studied blood DNA from 987 kidney cancer patients and 1,298 healthy counterparts living in Central and Eastern Europe, which have the highest rates of kidney cancer worldwide. The scientists analyzed DNA for hundreds of variations within 38 genes known to play a role in lipid

peroxidation, inflammation and oxidative stress.

Variants of two genes were associated with increased risk of kidney cancer: nitric oxide synthase 2A (NOS2A), which increases levels of nitric oxide, a chemical that promotes free radical damage to cells; and prostaglandin-endoperoxide 2 (PTGS2), which produces prostaglandins, compounds that cause inflammation. Variants of a third gene, apolipoprotein E1 (ApoE1), which helps break down and remove triglycerides from the blood and liver, were associated with a reduction in risk for the disease.

Replication and fine mapping studies will be required to confirm these findings, Moore said. She is planning another study to look at these genetic variants among white and African-American kidney cancer patients in the United States.

Kidney cancer, one of the 10 most common forms of the disease, has been increasing in incidence in the United States and worldwide since the 1970s, Moore said.

Source: American Association for Cancer Research

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