

Gene Mutations Linked To Worse Outcomes In Stomach Cancer

Researchers hope to identify molecular differences that would enable tailoring treatment to the biology of each patient's tumor.

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Researchers using next-generation DNA sequencing have identified four specific genes whose mutations are linked to the development and progression of lethal stomach cancers. This could potentially enable doctors to offer targeted treatments that would spare many patients from unnecessarily aggressive procedures, according to a study [presented] at [Digestive Disease Week \(DDW 2025\)](#).

“Not all stomach cancers are equal,” said Ulysses Ribeiro, MD, PhD, the study’s lead author and a professor at the Instituto do Câncer do Estado de São Paulo in Brazil. “Today, most gastric cancers are treated the same way — with surgery and chemotherapy — but we hope to identify key molecular differences so we can tailor treatment to the biology of each patient’s tumor.”

Researchers analyzed 21 genes in tumor samples from 87 patients who had undergone surgery and chemotherapy for gastric cancer and then tracked how the mutations related to survival.

About one-third of the patients had changes in a specific combination of four genes — BRCA2, CDH1, RHOA, and TP53 — and these patients were more likely to experience a return of their cancer or die from the disease. These mutations included both well-established cancer drivers — such as BRCA2 mutations, which are famously linked to breast and ovarian cancer — as well as previously unknown variants that may be important.

Dr. Ribeiro said the findings support the idea that a more personalized approach — guided by the genetic makeup of each patient’s tumor — may lead to better outcomes and, for some patients, less aggressive treatment.

To help bring this kind of testing closer to everyday care, Dr. Ribeiro and his colleagues are also working to match these genetic findings with widely available lab tests that use immunohistochemistry to detect proteins expressed by genes. That step could make it easier and more affordable to screen tumors for high-risk features in the future.

The study focused on patients from a Western population — a group that has been underrepresented in gastric cancer research. Most past studies have been conducted in East Asia, where the disease is more common.

While more research is needed before these findings change medical practice, they offer a promising path forward, Dr. Ribeiro said. “We believe that these findings move us closer to more personalized treatment based on each tumor’s biology.”

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