

Prostate cancer tumors' aggressiveness may be inherently fixed

15 August 2013, by Monte Morin

A new study of prostate cancer suggests that a tumor's aggressiveness is inherently fixed at the time of its appearance, although diet, lifestyle and environmental factors may trigger progression of the disease in low-level cases.

The findings, published Wednesday in the journal *Cancer Research*, add to mounting evidence that many small, slow-growing prostate tumors can be left in the body and carefully monitored instead of being treated with surgery, radiation, [hormone therapy](#) or drugs.

Doctors call this approach "active surveillance," and it's increasingly seen as a way to reduce the risk that men will suffer side effects like [incontinence](#) and erectile dysfunction after treating tumors that would not have killed them. The National Cancer Institute estimates that 238,590 men will be newly diagnosed with prostate cancer this year, though the tumors are generally slow-growing and most patients will die of something else.

Researchers set out to determine whether [prostate tumors](#) begin as indolent growths and become more dangerous over time, or whether their level of [aggressiveness](#) remains constant.

To accomplish this, the study authors examined 1,200 cases of men who had their prostates removed from 1982 to 2004 because of cancer. The sample consisted of men who were diagnosed before and after the introduction of the prostate-specific antigen test in the early 1990s, which became a popular tool to diagnose prostate cancer in men who had not yet developed symptoms of the disease.

The researchers focused on two measures that are often used to predict a tumor's behavior. The first measure, stage, describes the extent to which a cancer has spread. The second measure, Gleason score, describes just how normal or

[abnormal cells](#) are within in the [diseased tissue](#).

As expected, the incidence of advanced-stage cancers plummeted after the introduction of PSA screening, because more cancers were caught early. Late-stage cancers, defined as T3 or higher, made up 20 percent of the cases diagnosed from 1982 to 1993, but constituted only 3 percent of the cases diagnosed from 2000 to 2004, the researchers discovered.

In contrast, the number of high Gleason grade cancers - those above 8 - held relatively steady: They made up 25 percent of the sampling from 1982 to 1993, and dropped to 18 percent in 2000 to 2004. That difference was not deemed statistically significant.

The researchers determined that the cancer's aggressiveness must remain fixed; otherwise, high Gleason scores would have dropped more sharply, in line with the advanced-stage cancers.

Study leader Kathryn Penney, an epidemiologist at Boston's Brigham and Women's Hospital and the Harvard School of Public Health, said the results supported the idea of active surveillance for most prostate cancer patients.

"This isn't a reason in and of itself to take active surveillance," she said. "But if a patient's physician recommends active surveillance, and the patient agrees, this finding can make a man feel more comfortable about making that choice."

However, Penney acknowledged that there were still men with high grades of the disease who survived and men with low grades who died of illness.

"We think that while Gleason itself might be a fixed characteristic, there are likely other factors that are playing a role," such as diet and lifestyle factors like smoking, she said.

Dr. Robert Reiter, who directs the [prostate cancer](#) program at the University of California, Los Angeles, said the study was important because it addressed the fundamental question of whether cancers become more aggressive as the months and years pass.

But the data showed that not all cancers were fixed, and that some did change. The challenge for clinicians, Reiter said, was to "identify ones that have the potential to morph over time versus those that do not."

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