

Cancer expert tells how treatment can be problem

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Feb. 24--Max Wicha is coming to Pittsburgh today to deliver a startling message. Standard cancer treatments not only often fail to eradicate cancer, but can make it worse.

That argument isn't coming from a fringe proponent of alternative medicine, but from the founder of the University of Michigan's Comprehensive Cancer Center and a pioneer in research on why cancers recur and spread to other parts of the body.

The reason breast cancer and other malignancies often return aggressively after treatment is that when tumor cells die under assault from chemotherapy and radiation, they give off substances that can reactivate a special set of master cells known as cancer stem cells, Dr. Wicha said in an interview Tuesday.

Dr. Wicha's lab has found that inflammatory molecules secreted by dying tumor cells can hook up with the stem cells and cause them in effect to come out of hibernation.

He is scheduled to deliver the 2010 Bernard Fisher Lecture at 3:30 p.m. today in Auditorium 6 of Scaife Hall on the University of Pittsburgh campus. The talk, which is free and open to the public, honors Dr. Fisher, a Pitt researcher who pioneered the idea that lumpectomies are just as effective in treating breast cancer as mastectomies.

The existence of cancer stem cells is still controversial in some quarters, Dr. Wicha acknowledged, but is gaining traction.

In the last two months alone, researchers around the nation have published studies on cancer stem cells in breast, ovarian, prostate and brain cancer.

Adult stem cells exist in most tissues, and go into action to repair damage from wounds or infections.

In cancer, they can mutate and no longer obey normal bodily signals to stop growing, Dr. Wicha said.

He and other researchers say that even when chemotherapy and radiation cause tumors to shrink dramatically, these stem cells can stay alive, living under the radar until they are once again spurred into action.

They also believe stem cells are probably the ones that break away from an original tumor and cause cancer to spread elsewhere in the body.

Chemo and radiation kill off the fastest-growing cells in the body, which applies to most cancer cells, but the cancer stem cells that create those rapidly dividing tumor cells actually grow much more slowly themselves, and are less susceptible to those therapies, he said.

One tactic to address this problem is to kill off both types of cancer cells at once, Dr. Wicha said.

A recent experimental trial with advanced breast cancer patients at the University of Michigan, Baylor University in Texas and the Dana-Farber Cancer Institute at Harvard University used standard chemotherapy along with a substance designed to block one of the biochemical pathways of stem cells.

The approach killed off more than 90 percent of the cancer stem cells, Dr. Wicha said, and researchers now hope to expand the treatment to a much larger group of patients.

Ultimately, he hopes cancer treatments can avoid general chemo altogether, with its debilitating side effects, and just use targeted therapies against the stem cells.

There is still a long road ahead, he said, and "my feeling is, to really knock these stem cells out, we're probably going to have to use multiple inhibitors."

Tumors can re-seed themselves, study finds

WASHINGTON (Reuters) - Tumors can not only spread through the body by sending out tiny cells called seeds, but they can re-seed themselves, researchers said in a report on Thursday that may help explain why tumors grow back even after they are removed.

They said their findings, published in the journal *Cell*, may also help lead to the development of new drugs to stop the process of cancer spread, or metastasis.

“Circulating tumor cells can also colonize their tumors of origin, in a process that we call ‘tumor self-seeding,’”

Joan Massague of the Memorial Sloan-Kettering Cancer Center in New York and colleagues wrote.

“Now we have found that tumors can recapture some of their most delinquent children, enriching themselves with the most aggressive metastatic cells, enabling them to grow faster and more robustly,” Massague, a Howard Hughes Medical Institute researcher, said in a statement.

“Now we are thinking that in some cases, maybe treatment left inflamed tissue that had been a home for those cells that escaped and were residing somewhere temporarily, perhaps in the bone marrow,” he added.

“They may have re-entered the circulation in the weeks and months after surgery, and now, through the self-seeding process, have homed in on this tissue and reproduced the tumor.”

Massague’s team used mice, injecting them with human breast cancer cells that had been genetically engineered with a jellyfish protein to make them glow green under ultraviolet light.

They tracked these cells as they spread through the bodies of the mice.

Immune system signaling chemicals, including interleukin 6 and interleukin 8, appear to “call” the tumor cells home, Massague’s team found.

Researchers are working on cancer vaccines that could harness the immune system to attack cancer cells more effectively. This study suggests it might also be necessary to tone down some aspects of the immune system.

(Editing by Sandra Maler)<http://www.reuters.com/article/healthNews/idUSTRE5BN2N320091224>