MAYO CLINIC

Mayo Clinic News Network

Title: Potential new breast cancer drug is 'very exciting' / Date: Sept 1, 2017

Intro: Researchers are encouraged by the early results for patients using Z-endoxifen. The potent derivative of the drug tamoxifen was given to women with estrogen receptor positive metastatic breast cancer, the most common form of breast cancer in women whose disease has spread. The phase I study proved endoxifen is safe and it shrinks tumors – even for patients whose cancer had continued to progress with standard anti-estrogen therapies, including tamoxifen.

"As a proof of concept, obviously, this is very exciting," says Dr. Matthew Goetz, a Mayo Clinic oncologist and principal investigator on the study. "While the primary goal of the study was to safely deliver therapeutic levels of endoxifen, one of the most surprising observations was the prolonged anti-cancer benefit, [which] in some cases lasted more than two years in women whose cancer had progressed on standard hormonal-based therapies"

The Mayo Clinic study was the result of a close collaboration with the National Cancer Institute. Mayo scientists worked to assist with the preclinical drug development to ultimately conduct the first-in-human trial of Z-endoxifen in women with metastatic breast cancer. "We can clearly say that endoxifen, as a drug, would have never happened without this partnership with the National Cancer Institute."

For the Mayo Clinic News Network, Dennis Douda introduces one patient who is very grateful.

Video	Audio
Total running time [0:00]	/// VIDEO
Dennis Douda speaking	Rick and Jean Borman have enjoyed countless wonderful strolls together.
Rick Borman speaking	"**We'll be married 48 years this year."**
Dennis Douda speaking	Although they have also had to navigate an unwelcome detour.
Jean Borman speaking	"**I first discovered that I had cancer in 2003."**
Dennis Douda speaking	Jean had a mastectomy, and when she reached her five-year survival milestone, the Bormans thought she was in the clear, but cancer returned in 2009.
Title: Rick Borman Jean's husband	**"The recurrences started happening, boom, boom, boom, one year right after the other. She had five recurrences of the breast cancer, [which] spread to other areas; her shoulder, her chest, and then up to her brain."**
Title: Jean Borman Breast cancer patient	**"I ended up having to quit work, and I was no longer playing tennis or doing the volunteer work that I normally do."**
Rick Borman speaking	**"But to sit there and see someone you love going through this and know that**

	you can't do anything is very, very, very difficult."
Dennis Douda speaking	Tamoxifen is a very effective estrogen receptor-blocking drug used for decades. It's known for reducing the recurrence of breast cancer by almost half. But up to 15 percent of patients have a genetic variation that keeps their livers from making a vital enzyme needed to metabolize tamoxifen into endoxifen – basically its working form. Medications like antidepressants can also interfere with endoxifen conversion. So, in collaboration with National Cancer Institute researchers, Mayo Clinic set out to develop a drug that would deliver safe, effective doses of endoxifen directly.
TITLE: Matthew Goetz, M.D. **Medical Oncology** **Mayo Clinic**	**"We were able to achieve therapeutic concentrations of endoxifen, and these concentrations of endoxifen are anywhere from 10- to even 20-fold higher than those that are achievable with the drug tamoxifen."**
Dennis Douda speaking	Jean became one of 41 patients in a clinical trial specifically for women with advanced estrogen receptor-positive breast cancer who had failed standard therapies. One-third of them saw significant benefits with few, if any, side effects. "Most importantly," says Dr. Goetz -
Dr. Matthew Goetz speaking	**"So this tells us that the drug endoxifen, by proof of principle, is having anti-tumor activity in patients that had prior progression on tamoxifen."**
Dennis Douda speaking	Jean's doctors describe her response as remarkable, given that endoxifen has halted the progression of her cancer for nearly three years – when the expected benefit of any drug for someone in her situation would be two to four months at best.
Jean Borman speaking	**"It's been a miracle worker for me."**
Dennis Douda speaking	For the Mayo Clinic News Network, I'm Dennis Douda.

TAG: The findings of the clinical trial are published in the *Journal of Clinical Oncology*. Dr. Goetz says the next phase of research is already underway, directly comparing the effectiveness of endoxifen with tamoxifen.