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## Testicular Cancer: A Second Chance

*New Treatment Strategy Uses Stem Cells Combined with High-Dose Chemo After Preferred Treatment Fails*

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July 25, 2007 – When the preferred treatment fails to cure testicular cancer, a daring new treatment strategy offers hope.

The strategy involves intensive doses of chemotherapy. These doses would be lethal to blood cells, but researchers rescue patients by giving them infusions of stem cells isolated from the patients' own blood.

Can such a tricky business really work? Yes, suggests a study by testicular cancer pioneer Lawrence Einhorn, MD, Rafat Abonour, MD, and colleagues at Indiana University Cancer Center.

The researchers tested the treatment in 184 consecutive patients with metastatic testicular cancer that continued to spread despite state-of-the-art, platinum-based, combination chemotherapy.

Amazingly, 116 of these 184 patients had complete remission of their cancer without relapse for a median 48 months.

"Over the years we have mastered how to give these drugs -- two chemotherapy cycles with stem cell support," Abonour tells WebMD. "We have been able to show we can cure over 65% of these patients. Even among those not previously considered curable, 25% are cured with our approach."

The technique isn't without risk. The drugs apparently killed three of the patients; two from liver failure and the other from toxic effects on the lungs. Three others developed leukemia; two died.

"The toxicity window is very narrow," Manish Kohli, MD, a testicular cancer expert at the University of Rochester School of Medicine, tells WebMD. "There were three drug-related deaths in this study -- and that is in the hands of experts. But this provides hope as an option for patients who respond poorly to first-line treatment."

Patients undergoing the treatment take drugs that drive stem cells from the bone marrow to the blood. These cells are harvested and stored. The patients then undergo high-dose chemotherapy at five times the usual dose, followed by an infusion of stem cells to replenish their blood cells. Three or four weeks later, doctors repeat the process.

"We give them the big-dose chemotherapy, the big guns, to get rid of all the cancer cells. This also kills off the bone marrow, so we replace it by infusing these healthy cells," Abonour says. "So the patients, instead of being without normal blood cells for four to six weeks, it is only four to seven days. You can do it safely that way."

### Testicular Cancer 'Eminently Curable'

Kohli, who was not involved in the study, notes that while some 7,200 American men get testicular cancer each year, only 380 die. The overall cure rate is 90% -- and even when testicular cancer has spread, some 70% of patients are cured.

"This is an eminently curable cancer, so losing those 380 patients a year pinches us," Kohli says. "It has been a dilemma how to treat these patients. They are typically very young men in their late 30s or early 40s. Much life is ahead of them, and we want them to live as long as possible."

Abonour says that this dilemma is resolved, unless patients have other conditions that make it impossible for them to tolerate intensive chemotherapy. He suggests that all testicular cancer patients who fail preferred treatment are candidates for the new technique.

That's true, agrees Edmund K. Waller, MD, PhD, director of the bone marrow and transplant center at Emory Winship Cancer Institute in Atlanta.

"The potential to cure patients after they fail standard therapy without transplant is somewhat limited," Waller tells WebMD. "If they have second-line therapy that is not curative, the chances for third-line success is less."

Kohli, Waller, and Abonour say the excellent outcomes seen in the Indiana study can only be achieved in cancer centers that can field teams of experts able to provide intensive patient support.

"High-dose chemotherapy with stem cell support is not done in community hospitals, but typically at a referral center," Waller says. "Families really should ask the important question: Is the oncology team familiar with the disease?" Abonour says. "It takes an experienced team to work together to identify the right patients and the right treatment for each of them."

*The study by Einhorn, Abonour, and colleagues appears in the July 26 issue of The New England Journal of Medicine.*

*SOURCES: Einhorn, L.H. The New England Journal of Medicine, July 26, 2007; vol 357: pp 340-348. Rafat Abonour, MD, associate professor of medicine and associate dean for clinical research, Indiana University School of Medicine, Indianapolis. Edmund K. Waller, MD, PhD, director, bone marrow and transplant center, Emory Winship Cancer Institute, Atlanta. Manish Kohli, MD, associate professor, University of Rochester School of Medicine, N.Y.*