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## Lifewatch: Stem cell cancer treatment

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(WECT) - A little boy's parents were told he wasn't going to make it to his third birthday.

There are some types of childhood leukemia where chemotherapy and radiation don't work. These cancers are often fatal, even with aggressive treatment.



Now, doctors are turning to experimental stem cell therapies to give kids a fighting chance.

Adolfo Gonzalez will never forget the day his 2-year-old son was born. The excitement turned to devastation one year later when a doctor diagnosed little Adolfo with a rare form of leukemia called JMML.

"He said with or without treatment, your son will not survive,"

said Gonzalez.

Instead of giving up, the family found Dr. Gary Kleiner.

"Most of the cases are fatal by the time the child is three years old," said Dr. Kleiner.

Dr. Kleiner enrolled Adolfo in a trail testing umbilical cord blood transfusions.

"The stem cells from the cord blood started to grow in his own bone marrow and his white count started to increase back to normal," said Dr. Kleiner.

The new blood created by the stem cells replaced all of Adolfo's blood and eliminated the leukemia cells in his body.

"Once 100 percent of your blood is converted over to the cord blood, it's rare to see a relapse of leukemia," said Dr. Kleiner.

But, Adolfo's troubles weren't over. His new cells began to attack his body. Standard drugs didn't help, so doctors turned to stem cells, once again.

As part of another experimental treatment, Adolfo received eight infusions of adult stem cells to stop the destruction.

It worked. Today there is no evidence of cancer in his body.

Adolfo may not remember the tough first years of his live, but that's okay by his dad.

"He's going to be a great little boy. He's going to be just a normal little kid," said Gonzalez.

The cord blood for Adolfo's transfusion came from a public cord blood bank. Parents can choose to donate their babies cord blood shortly after birth.

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**BACKGROUND:** Juvenile myelomonocytic leukemia (JMML) is a rare form of childhood leukemia. The Leukemia & Lymphoma Society says JMML represents only 1.5 percent of childhood leukemias and occurs most often in infants and children under four years of age. The adult form of

the disease is called chronic myelomonocytic leukemia. Both JMML and CMML originate in a marrow cell that normally forms blood cells.

Children with JMML are lethargic and have fever, persistent infections and exaggerated bleeding in the skin, mouth or nose. Enlargement of the spleen and lymph nodes are common symptoms. The Leukemia & Lymphoma Society says over half of children with JMML have skin rashes, small, yellow-colored skin tumors, and multiple brown spots. The brown spots point to neurofibromatosis, which causes the growth of tumors in nerve cells.

**TREATMENT:** The American Cancer Society says there is no standard treatment for the disease, and an allogeneic, or donor, stem cell transplant offers the best chance to cure JMML. The JMML Foundation says this kind of therapy has about a 50 percent survival rate, and the risk of relapsing after the transplant is as high as 50 percent; however, experts still recommend a patient have a bone marrow transplant as soon as possible after diagnosis. Studies to examine other possible treatments for JMML are ongoing. One involves Etanercept (Enbrel), a drug that blocks a hormone known to play a role in helping leukemic cells grow. The drug is already FDA approved for use in patients with rheumatoid arthritis.

Since trials using chemotherapy and radiation to treat JMML have been unsuccessful, researchers highly recommend stem cell transplants. One method of receiving stem cells currently under investigation is through donor umbilical cord blood. Patients in the study receive chemotherapy to destroy leukemic cells and then receive umbilical cord blood from a donor or cord blood bank.

The new blood helps replenish the patient's white blood cell count. Gary Kleiner, M.D., Ph.D., a pediatric immunologist at the University of Miami School of Medicine in Miami, Fla., says one of the advantages of cord blood over bone marrow is it's easier to find donors in Hispanic or African American populations.

**A DANGEROUS SIDE EFFECT:** Graft versus host disease (GVHD) is a common side effect of donor bone marrow and cord blood transplants. In GVHD, differences between the donated cells and the recipient's body cause donor immune cells to attack the patient's body. The disease most often affects the skin, eyes, stomach and intestines. University of Maryland Medical Center says rates of GVHD can be between 30 and 40 percent among related donors and recipients and 60 and 80 percent among unrelated donors and recipients. The greater the mismatch between the donor and the recipient, the greater the recipient's chances of developing GVHD. Patients receiving a bone marrow or umbilical cord blood transplant normally receive drugs to prevent onset of GVHD.

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