

Adult stem cell research creating miracles in Covington

*By Debbie Glover
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In the emerging field of adult stem cell therapy, Drs. Gabriel Lasala and Jose Minguell of TCA Cellular Therapy, LLC, are conducting ground breaking innovative research into the regenerative properties of adult stem cells.

“This is like penicillin was a century ago,” said Lasala about his research.

A visit to their facility in Covington is like meeting Louis Pasteur when he proved the germ theory of disease.

Working through scientific protocols and funding their studies themselves, Lasala and Minguell have successfully treated limb ischemia or peripheral vascular disease, saving people from amputation surgery due to gangrene from diabetes.

They have successfully treated cardiac and other vascular conditions as well.

Lasala said that clinical trials in treating Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig’s Disease) and spinal cord injury are awaiting approval by the FDA, expected in as little as 30-60 days.

Imagine a veteran of the Iraqi War on Terror with shrapnel-inflicted spinal cord compression that has been doomed to life in a wheelchair. His life may be changed and he may walk again in as little as a few months with the help of Lasala and Minguell’s research.

Taken a step further, the researchers are designing protocols for other possible uses such as Parkinson’s disease and even diabetes. The possibilities are endless.

It’s science virtually at the speed of light.

The research involves two types of stem cells that are found in bone marrow. Bone marrow transplants have been used for years in the treatment of certain types of cancer.

Their research involves the use of MCS, or Mesenchymal stem cells that can differentiate into a variety of cells types and can regenerate damaged tissues such as bone, muscle, heart muscle and tendons; and EPC or endothelial progenitor cells that circulates in the blood and can differentiate into cells that make up the lining of blood vessels.

The procedure from the vantage point of the patient is rather simple. Bone marrow is removed from the rear hip through a minimally invasive, in-office procedure. The bone marrow contains a number of different types of adult stem cells.

The cells are then separated into the EPC and MSC cells. The cells are then washed and placed in a special medium for expansion, similar to a Petri dish. Over a two to three week period, the original 1,000 cells grow into 30-40 million cells while in a specialized incubator.

Once they have multiplied, the cells go through a seven-step protocol to check the cells prior to patient infusion.

The infusion is similar to a blood transfusion or injection.

The cells used are from the patient, or autologous cells. No one else's cells are put into a patient.

If for some reason the patient cannot undergo the scheduled procedure due to illness or some other reason, the cells are frozen in liquid nitrogen and kept in the on-site lab at minus 190 degrees Celsius or about minus 310 degrees Fahrenheit.

Their equipment is tied into the Lakeview Regional Medical Center's emergency backup system and there is also a manual backup so cells will be kept pristine for use.

Cells can be stored for at least 30 years, said Dr. Minguell.

Their facility also contains a "clean room" lab. Even the outer office of the lab requires booties on one's feet. The innermost room is a GMP lab, ISO-7 Class 10,000, a designation recognized worldwide for the control and management of manufacturing and quality control testing of pharmaceutical and/or biological products.

It is held to the highest standard by the FDA.

The scientists have designed the lab themselves, and it is built specifically for stem cell processing. The air pressure keeps the room sterile.

This is where the cells are checked for viability and "grown."

Although it only takes a few days to begin to multiply, it takes about two to three weeks to get the 15 million or more cells needed for the transplant.

The transplant itself only takes one injection and some improvement is apparent in a few days.

In one recent case of limb ischemia, or blockage of blood vessels in the leg, the patient was scheduled for amputation surgery because gangrene had started to set in.

The stem cell procedure was done and the two types of cells were able to create new vessels while at the same time coating the vessels and creating the membrane.

The patient still needed amputation, but instead of a below the knee procedure, only part of the foot had to be removed.

If they reach patients before gangrene, the results are more pronounced with relief in such symptoms, as pain and neuropathy and the patient will never need to face the threat of amputation.

There are 33 participants in limb ischemia clinical trials.

Lasala said that there is research in China whereby cells are being introduced in the liver and as a result pancreatic cells are creating insulin. This could be the cure for Type I diabetes in the next two years, said Lasala.

Currently, there are 60 participants in coronary ischemia clinical trials. This includes people who have had heart attacks, severe coronary artery disease, coronary ischemia, acute myocardial infarction and patients undergoing bypass surgery.

“In some cases, people who could not walk a block now walk, move, lift things after the stem cell therapy,” said Lasala.

In bypass surgery, another patient only had about 25 percent of their heart functioning. At the same time as the bypass surgery, stem cells were injected into the dead part of the heart. After two months, tests indicated the affected area was beginning to show compression and squeezing.

Drs. Lasala and Minguell have created the Stem Cell Foundation and are trying to raise additional funding. With their current limited resources, they have made tremendous breakthroughs, and Lasala has presented his findings to multiple medical conferences as an expert on adult stem cell therapy, including the European Congress of Cardiology in Barcelona, Spain and the World Stem Cell Summit in Baltimore, Md.

More funding is needed to increase their research opportunities and increase the number of patients they can treat. The treatments are not covered by insurance.

For more information on how to become part of the studies or to donate to the foundation, call TCA at 867-4860.