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A Dog's Stem Cell Life

Golden Retriever Shows Quick Improvement After Being Injected With His Own Stem Cells

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Meet Hunter, a 9-year-old golden retriever. His big, friendly personality dominates life at home with Frank and Linda Riha in Burbank, Calif.

"This is like our child," Linda said. "I mean he is such an important part of our family."

Whether eating, sleeping or going on his daily walks, Hunter calls the shots.

According to Frank, "life revolves around Hunter." And everybody knows him.

"He's a celebrity on the street," said Linda.

But Hunter has a serious problem: severe arthritis in his left hip is so painful that he can't run or leap like a healthy dog.

"His leg, it's almost like it's lifeless and it'll drift back," Linda said, referring to Hunter's tendency to favor his right leg.

X-rays show that Hunter has hip dysplasia, a common ailment in purebred dogs that causes the ball of the leg bone to loosen from its socket, causing painful wearing on the joint.

"You can see that the edges of the bone are very worn away. They're not nearly as smooth," said veterinarian Jerry Bausman.

Facing the possibility of a shortened life for Hunter, the Rihas were considering a $10,000 hip replacement when the doctors offered something new, different and much less expensive. For only about $2,500, they could treat Hunter with his own stem cells, the healing and regenerative cells that live in both humans and animals.

"This is an excellent in-between that may mean he may never need a total hip," Bausman said.

Making Strides Without Red Tape

In the race to perfect "regenerative medicine," stem cell therapy for animals is ahead of treatment for humans because it is not so strictly regulated. It's not experimental -- it's here.

And while the debate rages over the ethics of embryonic stem cell research, doctors have made stunning progress with "adult" stem cells recovered from body fat.

They are less powerful than embryonic cells, but they don't require the destruction of an embryo. There are no side effects and no problems with rejection, because the patient is also the cell donor.

"We're kind of reverting the body back to a younger age or a younger stage when we were more of a regenerative stage," said Bausman.

In a fairly easy procedure, Hunter's stem cells will be recovered from his body fat, isolated in a laboratory, and reinjected into his hip in greater concentration than his own body could accomplish.

Linda was relieved.

"He's just special," she said of Hunter. "He's just a good boy and I get emotional, but it's cause I love him so much."

Hunter was led away and prepped in an animal surgical ward that would be the envy of a lot of small hospitals.

The doctors can take fat cells from anywhere in the body, but they chose to cut just behind Hunter's shoulder where they find a good deposit of fat. Hunter is a little overweight, which adds to his trouble.

The veterinarians removed about 30 grams of fat, packed up the cells and whisked them away to the Vet-Stem laboratory outside San Diego where this procedure has been developed. At Vet-Stem, the fat cells are chopped up, treated and put in a centrifuge that separates the stem cells.

Success With Horses

"The concept is very simple," said Vet-Stem's CEO and founder Robert Harman. "It took a lot of years for us to figure out where these cells were and which ones were they. And how to use them."

Harman said his company has already treated about 3,000 horses, many with joint problems. One of them was a race horse named Be a Bono, who had bone chips in the knee and damage to the sack that holds cushioning fluid around the joint. It threatened to end his career, if not his life.

"You're always skeptical about something new, and you want to see if it works and so somebody has to try it. We did, and it worked," said horse trainer Dan Francisco.

After stem cell injections, Be a Bono returned to racing and has since earned $1.25 million in prize money.

But is it safe? Francisco thinks so. "I don't see any reason why humans aren't doing it," he said. With so much success in horses, word got around and people started to ask Harman if Vet-Stem could treat their beloved dogs. A Newfoundland named Magic that was nearly crippled by arthritis was one of the earlier patients.

"We just thought, well, it couldn't really hurt her, there was no downside to it, so it was worth a try," Magic's owner Nancy Olenick said.

Magic showed dramatic improvement in about a month. Overall, the treatment has brought significant improvement about 70 percent of the time, allowing veterinarians to be the pioneers in practical use of stem cells.

"If we were creating cells in a bottle from donors or we were trying to use cells from embryos, which you hear a lot of the controversy about, that would be fully regulated on the veterinary side," Harman explained. "But right now because it's the animals' own cells, it's like a transplant. It's a surgical transplant of cells. & We're allowed to do that in the veterinary world."

'This Will Replace Many Kinds of Devices'

Stem cells show great promise for healing animal joints, hearts, livers and kidneys & and perhaps, in the future, humans.

"We're a long way from growing a whole organ from outside of a body and transplanting it. We're decades away I'm sure," Harman said. "It's a very difficult prospect. What we can do is take these cells and put them into a damaged organ and help the organ truly heal itself."

Right now it takes almost 24 hours to send fat cells to a remote laboratory and return them for reinjection. A couple of companies are working on a process, and the machinery, to isolate stem cells in the surgical ward.

One day, just maybe, stem cells will be injected into stroke and heart attack victims, and maybe even used to regenerate damaged spinal cords within hours of injury.

"I think the cells we have within our body are much better at healing us than any devices that man can contrive," said Paul Kosnik, vice president of engineering at Tissue Genesis. "So, I believe this will replace many kinds of devices, many kinds of procedures by using your cells' own ability to heal you by just placing those cells in the right environment at the right time and unlocking their power."

The procedure is still in its early stages, but that may soon change. Three companies in the United States have started clinical trials with stem cells from fat cells on humans, and initial results are expected to be made public later this year.

As for Hunter, the golden retriever, his stem cells arrived back to the animal hospital the next day and were injected into his hip in a short and simple procedure.

"My gut feeling is always that they're going to do really well," said Bausman. So far, every case that I've seen and my colleagues that are doing this, too, are showing excellent results."

Two weeks after the injection it's still early, but Hunter is already a different dog. He's moving easier, and seems happier. His owners are too.

"He jumped up on the bed, which is almost three feet tall, and he hasn't done that in quite a few months, and we kind of freaked out because he's supposed to stay quiet, but he was right up there and ready to go," said Frank.

For Hunter, a dog's life is a very good one on the leading edge of medical science.