Medical Xpress

Can stem cells help those with arthritis?

April 28 2013, by Julie Deardorff

Stems cells taken from just a few grams of body fat are a promising weapon against the crippling effects of osteoarthritis.

For the past two decades, knee, hip or other joint replacements have been the standard treatment for the deterioration of joint cartilage and the underlying bone. But artificial joints only last about 15 years and are difficult to repair once they fail.

Stem cell injections may offer a new type of therapy by either stopping the degenerative process or by regenerating the damaged cartilage, said pioneering researcher Dr. Farshid Guilak, a professor of orthopedic surgery and director of orthopedic research at Duke University.

Guilak, one of the first researchers to grow cartilage from fat, explains why stem cells are a bright light in osteoarthritis research and why widespread clinical use is still years away. Below is an edited transcript of the interview.

Q: How are stem cell injections purported to help?

A: Several studies in animals show that stem cell injections may help by reducing the inflammation in the joint. Stem cells appear to have a natural capacity to produce anti-inflammatory molecules, and once injected in the joint, can slow down the degenerative process in osteoarthritis.

(Since this interview, research published in *Stem Cells Translational*

Medicine has found that stem cells may also be an effective way to deliver therapeutic proteins for pain relief related to rheumatoid arthritis .)

Q: Does the bulk of research look at how stem cells heal traumatic injuries, or does it look at degenerative conditions such as arthritis?

A: Nearly all previous studies on stem cell therapies in joints have focused on trying to repair small "focal" damage to the cartilage. Only a few recent studies have begun to examine the possibility for treating the whole joint, either to grow enough cartilage to resurface the entire joint or to use stem cells to prevent further degeneration.

Q: Meaning one day, entire joint surfaces such as hips and knees could be grown in a lab?

A: That has been one of our primary research goals, so that people with arthritis can simply resurface the cartilage in their joints without having a total joint replacement. To do this, we have developed a fabric "scaffold" that can be created in the exact shape of the joint, while allowing stem cells to form new cartilage. One of our most exciting findings was the discovery that fat tissue contained large numbers of stem cells that could form cartilage and bone. In this way, we could easily get enough cells from a small liposuction procedure to completely resurface a person's worn-out hip or knee.

Q: Is it legal to get stem cell treatment for osteoarthritis in the U.S.?

A: While there is great promise for stem cell therapies, there's little clinical evidence supporting it for arthritis; we don't yet know if this type of treatment is safe in humans, or for that matter, that it even works. Some physicians are offering these treatments without FDA approval, but I feel it is irresponsible and potentially dangerous to perform such a

procedure without having a clear understanding of the possible risks and benefits. Several clinical trials are planned and ongoing, mostly outside the U.S.