Argus Orthopaedic Zone

Stem Cells – Orthopaedic Style

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Transforming patient information into patient understanding.

This week I will conclude our discussion of stem cells. It was not designed to make you experts, but to give you a few concepts about stem cells.

It is a vast, emerging, very emotional and controversial subject.

Progenitor Cells

When stem cells divide they begin to produce progenitor cells. These cells are more differentiated than stem cells.

Progenitor cells can become cells with more specialized functions. They can become brain cells or red blood cells, etc.

Of particular interest to Orthopaedic Surgeons are progenitor cells that are components of very specialized tissue such as bone and cartilage.

Mesenchymal Stem Cells

Remember, last week I said that in Orthopaedic Surgery the focus is on mesenchymal stem cells. Mesenchymal stem cells are not embryonal stems cells. Mesenchymal stem cells are obtained from living adult tissue.

Bone Marrow Stromal Cells

Bone marrow stromal cells are mesenchymal stem cells that can in the proper environment differentiate into cells that make up the musculoskeletal system which I deal with every day.

What can they make?

- Trabecular or spongy bone as it is referred to
- Tendons
- Articular cartilage
- Ligaments
- Part of the bone marrow system

Research

At this point in time stem cell procedures in Orthopaedic Surgery are still in the experimental stage. Most of the Orthopaedic Surgery procedures are performed as part of controlled trials at University Research Centers.

Specific Future Uses

- Complicated fractures
- Fractures that won’t heal (non-union)

- Arthritic joint cartilage regeneration
- Ligament and tendon healing
- Replacing degenerative vertebral discs

You and I are looking now into the future. How far into the future no one can say at this point. Biomedical tissue engineering will have the answer.

But it will come! Patients of the future will look back on what we do now the way we look back on black and white television and telephones that were black and sat on a desk or table.

Every week or even every day in the office I see patients who have

- Disabling back pain from worn out discs
- Tendons or ligaments that don't heal properly
- Osteoarthritic knees and hips
- Fractures that are slow in healing or won't heal at all.

These daily problems I see will be treated in far different ways than the relatively invasive, often painful means we have to use today.

This is not day dreaming. It is here now, but still in the experimental stage. We are, as it were, in the 1960's when Professor (Surgeon) John Charnley in England was perfecting Total Hip Replacement. Hardly anyone outside his medical center in England had ever heard of him. He revolutionized the specialty of Orthopaedic Surgery worldwide and changed the lives of countless patients with painful arthritis. He was knighted by Queen Elizabeth for his monumental contribution to Orthopaedic Surgery.

There are even greater discoveries on the horizon in Orthopaedic Surgery I promise you.

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It contains a world of musculoskeletal information you and your family and friends can use!

Website, Your Orthopaedic Connection, Archive of all previous Argus articles.

Please check it out. Be well.

Dr. Haverbush