Stem cell therapy, dementia and a few related concepts,

By Bryon Verhaeghe July 2016

Stem cells are the original cells that can differentiate into many other types of cells. As an adult these stem cells remain active in our bone marrow to differentiate into white blood cells, red blood cells and platelets on a daily basis.

More recently they find a concentration of stem cells in the nasal area to constantly generate the cells responsible for the sense of smell (olfactory). Also, they find a few stem cells floating in our blood stream.

In a stem cell therapy, some of the stem cells are harvested, grown to increase their number, sometimes they are encouraged to increase certain aspects, then they are re-introduced back into the body.

For a stroke patient or someone suffering from dementia such as Parkinson's or Alzheimer's disease, they inject them directly into the brain.

Before a new nerve cell, or any cell, can be replaced, the old cell must be removed. This is often through a process called aptoptosis where the cell signals to be killed and eaten by the large macrophage that comes from a stem cell and is one of the white blood cells.

A macrophage starts out it's average of one year life span from bone marrow stem cells as the white blood cell called a monocyte. The monocyte is small and travels around the body in the blood stream.

When another cell (neutrophil) signals to the monocytes, usually through an interluken, inter means between and luken means white blood cell as in leukocyte, leuko -white, cyte -cell.

When the monocytes receives the signal that it is needed, it then leaves the blood stream and moves to the area signaled from. When outside of the blood vessels the monocyte enlarges to become the macrophage. Macro means large; phage means eater. A macrophage is large enough to eat bacteria, viruses, parasites, fungi, tumors and even our own cells.

Macrophage activity is part of the swelling seen with an inflammatory response. Some anti-inlflammatory drugs stop the movement of monocytes, and some stop the cell signalizing of interleukin, hence, immunosupressive. The removal of debris to allow healing is stopped before it starts.

Stem cell therapy works the opposite of immunosupression by improving the activity of the white blood cells, improving the 'big eating' of debris, and allowing a curative healing process to begin.

There are variation in the types of stem cell therapies because there are variations in how a defective human cell can be signalled to be removed.

One is the enzyme named flippase. This is a larger protein that travels from inside the cell to the outside through the cell membrane.

A cell membrane is a lipid bilayer; to layers of fatty acids (oil) end to end to regulate the movement of moisture, nutrients and gasses. We are 60% water and these lipid bilayers are like a balloon membrane holding our water inside and not leaking out.

When a molecule containing the amino acid serine is moved from the inside lipid layer to the outside a macrophage is signaled to clean up and eat the cell for disposal.

When a cell needs to increase the amount of membrane it uses a trans-membrane protein called NOTCH1. When present the cell signals to be stimulated to grow more membrane such as myelin sheath or nerve cells. The receptor part sticks another melecule to the outer membrane and is based on the sticky sulfur in cysteine.

Cysteine is one of a few amino acids with sulfur. A combination of three amino acids with cysteime is gluathione. The gluathione sticks to the omega-6 oils that trigger inflammation whereas, cysteine works the same but facilitates the movement of small atoms of things like iron, zinc and iodine as a transport system around the body.

Another sulfur that is good at sticking to metals is called alpha lipoic acid. This one uses two sulfurs adjacent to each other to give extra sticking power. Fortunately alpha lipoic acid can freely move in and out of the brain area where it can stick to heavy metals such as mercury for a detox. Mercury is highly toxic to nerve cells.

Once picked up the sticky alpha lipoic acid gets the mercury into the blood stream where another sulfur – methyl-sulfonyl-methane that we know as MSM effectively continues the movement of mercury out of the body.

Collectively, the molecules that trap, move and possibly release their guest are called metaloenzymes or metaloproteins and even metaloproteinase. Confusing because of variations, but the key issue is moving minerals around the body as needed.

The functional part of most metalo- molecules is cysteine. In mammals the cysteine is needed to hold zinc in place. In fungi the same cysteine is needed to hold copper in place for their nutritional needs. Our water pipes 60 years ago were mostly galvanized (coated) with zinc, but today we have replaced most of them with copper. The increased copper in our drinking water greatly enhances dementia, brain damage, memory loss, anger and violence.

The symptoms of autism and Alzeihmer;s is remarkably similar, just and age difference. In all autistic kids they find a copper excess and a zinc deficiency. On autopsy they find copper rather than aluminum to be responsible for dementia. In a lab setting either aluminum or copper can induce the same nerve damage.

A macrophage can discard the defective cell as debris to include tumor cells, whereas in contrast, the metalo- molecules remove and move as needed the minerals. They are both needed to clean up an area for a repair or reconstruction to happen.

Stem cell therapy enhances parts of this process.

The immune system is capable of doing the entire process but can easily be compromised. The amplification of stem cells enhances our ability to recover and repair damaged cells.

An interesting fact about the nerve cells in the brain that are responsible for memory, navigation and balance have an external sulfur attached to about every third lipid in their bilayer. I speculate that his is to allow a single lipid, a triglyceride in this case, to be hoisted out of place rather than destroy the entire cell. In this way the memory can be maintained and a smaller repair done. This would be like changing the tire on a car rather than replacing the entire car.

The nerves that travel through most of the body do not have these sticky sulfurs attached to the outside. A nerve cell in the body can be replaced in whole part as it does not have the need for a memory.

Of interest is that we are born with little myelin sheath.

This sheath allows a gap around the nerve to allow electron energy to skip across and onto another nerve cell. In this process we have thinking, reasoning and will power whereas the long nerves of the body just move electrons along one nerve cell as a message.

Most of the myelin sheath is in the brain and develops most while learning to crawl, talk and walk. The myelin sheath is the mechanism to store memories. This is in part why we cannot remember birth and early childhood, we do not have myelin sheath at the start of life.

The decline of brain power (dementia) and memory loss is both from loss of nerve cells and a lessening of myelin sheath.

Not intended to diagnose or treat anything. Just some interesting notes that I wanted to write down as a start for further work – Bryon Verhaeghe July 2016