

The Dangers Associated with Stem Cell Tourism and Marketing Unproven Treatments

By Auria Torshizi

There is no doubt amongst physicians and researchers that the future of medicine lays within the newly discovered, yet unproven potentials of stem cells. As researchers continue to work around the clock to translate the potentials of stem cells into safe and effective treatments, greedy entrepreneurs have already begun to capitalize on this premature idea by advertising unproven treatments to desperate patients suffering from debilitating diseases. By establishing stem cell clinics in countries with little to no federal regulations (such as Mexico and China), entrepreneurs are able to avoid regulations that require new drugs or treatments to establish their safety and efficacy through years of clinical trials. As a result, hopeless patients are traveling between countries to gain access to unproven stem cell treatments in a final attempt to treat their symptoms; this novel and unsafe industry is known as stem cell tourism.

In order to understand the dangers associated with stem cell tourism, we must first understand the potentials of stem cells in medicine. Stem cells can be viewed as ‘blank’ or unspecialized cells that can differentiate (transform) into the 200+ specialized cells of our body. During early development, the embryo provides a complex combination of molecular signals and factors that instruct stem cells what to differentiate into (a neuron or a muscle cell, for example), how many times to divide (how many neurons do we need), and where to migrate to (neurons need to go to the brain). These molecular signals and factors are the basis to understanding and regulating stem cell differentiation. In theory, scientist can grow stem cells in a petri dish, add the appropriate ‘cocktail’ of signals and cause them to differentiate into specialized neurons. These cells can then be injected into a stroke patient where they can migrate to the brain and replace damaged cells. Unfortunately, this is only a theory because we simply don’t know enough about the molecular mechanisms of how stem cells operate to be able to translate this power into safe and effective treatments for the public.

Before any new treatment becomes available to the public, it must undergo a series of pre-clinical trials where its toxicity and other potential harms are determined on animals. Upon passing this phase, the treatment undergoes another series of extensive clinical trials, only this time, its

interaction is tested and determined within the human body. While most stem cell-based therapies are still in the pre-clinical phase (animal testing), devious clinics around the world are making millions by advertising a laundry list of unproven treatments to desperate patients who think they have nothing to lose.

Frankly, there's always something to lose. Just take the story of Mr. Gass who suffered a stroke and was left with a weak left arm and leg. Mr. Gass was inspired by a single anecdotal story of a legendary hockey player whose recovery following stem cell injections was exaggerated by the media. Despite going to the exact same clinic and receiving the same treatment, not only did Mr. Gass not recover, but he was also left with a growing tumor in his lower spine (Figure 1A-B) and paralyzed from the neck down. It seems as if being \$300,000 in debt is not even the worst part of his failed treatment [2].

The lack of regulations not only allows these clinics to operate in the dark, but also allows them to control and create their own methodology. In Mexico for example, as long as the clinic is federally "licensed," the methodology and administration of the treatment is left completely up to the "discretion of the physician." In other words, years of research in FDA-regulated clinical trials have been replaced with the discretion of physicians in third world countries.

While the choices are limited, there are thousands of studies currently undergoing clinical trials that can provide much safer treatments than those of dubious clinics. For those interested, [here](#) is a list of clinical trials involving stem cells.

In the end, there is a reason why clinical trials are highly regulated; there's a reason why none of these doctors and their innovative stem cell "treatments" have won the nobel prize in medicine. Frankly, the reason is that these clinics are not treating patients, but really selling expensive and false hopes to desperate patients, and putting their lives at risk in the process. With many potential stem cell treatments on the horizon, we must continue to respect the process of medicine and not force a pre-mature future that could cause more harm than good, both in the lives of patients, and in the field of stem cells and medicine.

References

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2. Kolata, Gina. "A Cautionary Tale of 'Stem Cell Tourism'." *The New York Times*. The New York Times, 22 June 2016. Web. 10 Mar. 2017.