Clinical Applications of Adipose Derived Stem Cells

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ABSTRACT

The Regenerative Medicine Institute (RMI) of Tijuana, Mexico has partnered with both the Ageless Regenerative Institute (ARI) and Bioheart to offer a variety of clinical protocols to patients suffering from degenerative diseases.

In one protocol, developed and executed by RMI and ARI, patients diagnosed with chronic obstructive pulmonary disease (COPD) are being treated with adipose or fat derived stem cells (ADSCs). To date, 22 patients with COPD have received an intravenous delivery of the stem cells.

The trial has established a solid safety profile as well as some early evidence of efficacy. More than 83% of the patients have demonstrated a statistically significant improvement in their quality of life. Some of this data includes follow up greater than 6 months. The average improvement in the St. George’s Respiratory Questionnaire was 23 points. This represents a potential new breakthrough for COPD patients who often suffer from a rapid decline in health after diagnosis. Existing therapies are designed to target acute symptoms and do not reverse the effects of the disease or improve the underlying issues.

In addition to improving the patient’s quality of life, the treatments showed a marked improvement in their exercise capacity. Three months after receiving the therapy, the patients were able to walk on average an additional seventy meters in their six minute walk test.

RMI and ARI have also partnered with Bioheart to bring regenerative therapies to cardiac patients. In a protocol focused on congestive heart failure (CHF), 15 patients have been successfully treated using adipose derived stem cells. The cells are delivered directly into the heart muscle using a catheter. These patients have demonstrated on average, an absolute improvement of 13 percentage points in ejection fraction and an increase of 100 meters in their 6 minute walk distance at their 6 month follow up. In addition, the patients have improved their exercise capacity which allows for a more active and normal lifestyle.

METHODS

- 60 cc’s adipose tissue removed via local tumescent anesthesia
- Fat washed to remove red blood cells
- Enzymatic digestion with Adipolase
- Centrifugation to separate stromal vascular fraction
- Washing and filtration
- Cells delivered to patient

RESULTS

Chronic Obstructive Pulmonary Disease

- 22 patients treated
- Average improvement of 22 points in SGRQ - QOL
- Average increase of 174 meters in 6 minute walk exercise capacity test

Congestive Heart Failure

- Intracardiac delivery via MyoCath catheter
- Number and frequency of adverse events
- Pulmonary function tests
- Exercise capability
- Quality of life

Wound Healing

- Intramuscular delivery in and around wound
- Number and frequency of adverse events
- Changes in left ventricular ejection fraction (LVEF)
- Exercise capability
- Quality of life

CONCLUSIONS

- Adipose tissue is readily available and a plentiful source of stem cells
- ADSCs can be harvested in 90 minutes at patient bedside
- ADSCs can be utilized in degenerative diseases to promote reduction of inflammation, angiogenesis and healing
- Preliminary data for COPD, CHF and wound healing demonstrates strong safety profile and efficacy in patients.

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