Interventional Cardiology

Editorial on Novel Strategies in Regenerative Medicine

Editorial

Dr. Diego Sebastián Mendo- Instituto Cardiovascular de Rosario -Argentina

Regenerative medicine seeks to replace tissue or organs that have been damaged by disease, trauma, or congenital issues, vs. the current clinical strategy that focuses primarily on treating the symptoms. From being discarded as waste at the time of a baby's delivery to being recognized as a repository of stem cells and the building blocks of regenerative medicine, the cord blood and tissue has come a long way.

Regenerative medicine does have a track record of success albeit in a very small number of diseases. "More complex diseases such as diabetes or heart infarct will require more advanced approaches than what is available today in order to see a significant clinical impact. Regenerative medicine also may enable scientists to grow tissues and organs in the laboratory and safely implant them when the body is unable to heal itself. Current estimates indicate that approximately one in three Americans could potentially benefit from regenerative medicine.

The field of regenerative medicine has recently made marked advances in stem cell research. Adult stem cells, called somatic or tissue stem cells that can only be differentiated into limited cell types, have been generally used for regenerative medicine. However, with the development of iPS cells, tissues and cells of interest will be artificially generated and implanted into patients to repair sites of damage. In the present study, technical objectives for this purpose are summarized.

The ultimate goal of cell-based therapies is to regenerate and restore normal function. Populations of embryonic, fetal, adult stem cells and inducible pluripotent stem cells generated by reprogramming of adult cells show promise for the treatment of a variety of diseases. In addition, the recent advancements in adult stem cell biology in both normal and pathological conditions have led to the identification of some intrinsic and extrinsic factors that govern the decision between self-renewal versus differentiation of tissue-resident adult stem cells. This is of primary importance for the design of an approach of stem cell-based therapy focused on their in vivo modulation by conventional chemical and biological therapeutics capable to stimulate endogenous cell regeneration.