

PLENARY 9 (PL9): Stem cells and its clinical applications

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Himanshu Patel is the current Director of “STEM CURE PVT LTD” Ahmedabad, India. He is a freelance embryologist to many IVF clinics in India, Sri Lanka, Malaysia and various centers in South East Asia. He is a PhD co-supervisor and PhD examiner at University of Kelaniya, Sri Lanka, Visiting Faculty and PhD co-guide to Indian Institute of Technology (IIT), Varanasi and Uka Tarsadia University, Bardoli, Gujarat, India. He is a member of the Committee for Clinical Research in Indian Society of Assisted Reproduction. His career highlights include endometrium regeneration through stem cells in the patient of Asherman Syndrome, autologous chondrocyte culture for the treatment of cartilage defects, melanocyte culture techniques for treating vitiligo, keratinocyte culture technique for treating non-healing ulcers and skin burns, clinical application of adult stem cells for cardiovascular and pulmonary disorders, spinal cord injuries and dental conditions (mandible bone defects).

SUMMARY

The concept of stem cells was introduced by Alexander Maximow in the year 1909. Stem cells comprise of "primitive cells" that have the ability to divide indefinitely and give rise to specialized cells under specific conditions. Because of these two distinct characteristics they have received particular attention in recent decades. Stem cells have very potent clinical application in treating cardiovascular, pulmonary, spinal cord, skin, burns and wounds, gynaecological and orthopaedic disorders. Stem cells have proven to be a very good source for treating thin endometrium that could be one of the factors for infertility in women. Endothelial progenitor cells (EPCs) improve vascular blood supply and incorporated into neovessels at sites of damage and significantly improved blood flow. EPCs regenerate the endometrial epithelium with its vascularity and make it mature enough for implantation. Recent findings suggest that ovaries contain stem cells which form new oocytes in adulthood and these can be cultured in-vitro to form mature oocytes. These findings provide new hope for fertility preservation. Even the advances in the technology has achieved to develop germ cells from pluripotent stem cells through iPS. Currently there are limited established clinical application though the research is going on using different type of cells for various different clinical conditions.

Session chair: Prof Prasantha Wijesinghe