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REGENERATION



all leg amputations are caused by diabetes and most amputations begin with foot ulcers. Therefore, through stem cell approach, a potential cure could be found.

Biotech companies based in the US namely Genex and Curis are already working on the commercial applications of this new medical technology in India, informs Hitesh Gajaria, executive director, KPMG India. "It is estimated that in the next 5-10 years, stem cell therapies will be able to treat a number of diseases. It is estimated that, roughly 128 million people suffer from diseases that could be effectively treated or cured through stem cell therapy. Out of these, as many as 58 million people suffer from some form of cardiovascular diseases, treatable through this new form of medical treatment."

Muralidharan Nair, partner (advisory services) Ernst & Young says, "Healthcare companies have begun rolling out stem cell based therapies commercially in India beginning with treatment for restoring vision. They have lined up other stem cell therapies for cardiac infarction and diabetic ulcers which may be offered in clinics and hospitals in few months." According to him, increased funding by various governments around the world can expand the potential of hospitals, stem cell banks and biotech companies in India engaged in this segment. Stem cell transplantation facilities are increasing in India, but for optimal utilisation of these facilities, it is important to create concept awareness, which is currently lagging behind, insists Gajaria.

On the research front, department of biotech (DBT) officials inform that there is a short term goal to study biology of all types of adult stem cells and evaluate the efficacy in animal models. Christian Medical College, Vellore and DBT have set up a centre for stem cell research to carry out basic, clinical and translational research.

According to AIMS officials, while there are number of laboratories working to improve stem cell purification and expansion for efficient therapeutics, the long-term side effects is still unknown as most of the clinical studies are very recent.



THE HOLY GRAIL

Healthcare providers readying stem cell therapy

- Apollo Group
- Cadila Pharmaceuticals
- Fortis Hospitals
- KG Hospital, Coimbatore
- LV Prasad Eye Institute
- Manipal Institute for Regenerative Medicine
- Reliance Life Sciences

Therapies available for:

- Cardiac disorders
- Spinal cord injury
- Metabolic disorders
- Ophthalmic diseases
- Oncological diseases
- Diabetes
- Orthopaedic disorders

By the numbers

- \$20 billion: Global market for stem cell therapy by 2010; India is expected to garner 5% of this share by next year
- 20 million: Indian patients to undergo stem cell therapy every year

Source: Frost & Sullivan

CENTRES

Stem cell research is finally moving out of the labs to Indian hospitals to cure diseases like cardiac and eye disorders, diabetes, spinal injuries and cancer

Sudhir Chowdhary & BV Mahalakshmi

At LV Prasad Eye Institute, Hyderabad, eye specialists are using a new approach to repair eye damage. By growing new corneas from adult stem cells in a petri dish, they have surgically implanted these corneas in over 1,000 patients with damaged eyes, thereby making the institute one of the most prolific facilities globally to use stem cells from living adults to grow new cells.

At the multi-specialty KG Hospital in Coimbatore recently, doctors successfully cured two patients—a 40-year old lady suffering from serious spinal cord injuries and a 70-year old lady ailing with a coronary heart disease—by conducting successful stem cell transplantations. Encouraged by the results, the hospital has formally introduced stem cell treatment to cure patients suffering from spinal injuries and heart disease, to begin with.

There is some good news for diabetics as well. A new treatment involving stem cell therapy is round the corner as doctors at the department of diabetes and metabolic diseases, Fortis Hospitals (Delhi and Noida), will soon start using stem cell therapy to repair damaged tissue for foot ulcers in diabetic patients. At another Fortis Hospital in Mohali near Chandigarh, doctors are readying stem cell therapy for patients suffering from spinal cord injuries as well.

Reliance Life Sciences is aggressively developing wide range stem cell therapies in the areas of cardiac disorders,

spinal cord injury, metabolic disorders, oncology, ophthalmic diseases, among others. The company is closely working with several hospitals to conduct clinical trials for its offerings, before it launches its therapies commercially.

Apollo Hospitals has set up a dedicated facility in Hyderabad, which is undertaking the development of new stem cell therapies for cancer, heart disease and diabetes. Eventually, such therapies will be launched commercially at its various hospitals across the country.

Clearly, the buzz around stem cells is no longer confined to research breakthroughs and is expanding in its ability to cure life-threatening diseases like diabetes, heart disease, various forms of cancer, spinal injuries, Alzheimer's disease, Parkinson's disease, rheumatoid arthritis and many others. Large pharmaceutical majors, hospitals and stem cell bank companies are seeing it as a viable business too. Incidentally, India is now part of Stem Cell Network Asia Pacific, an organisation established in 2007 to promote the development of stem cell research in the region. Besides India, member countries include China, Japan, South Korea, Taiwan, Thailand, Singapore and Australia.

"Stem cell therapy is an amazing modern medical advancement that goes straight to the source of the problem—damage at the cellular level. In India, such a therapy has good potential in ocular, cardiovascular, and neurological disorders," says Mayur Ahirya, president and executive director, LifeCell, a stem cell bank major.

In India, healthcare biggies like Fortis Hospitals, Cadila Pharmaceuticals,

Apollo Hospitals, All India Institute of Medical Sciences (AIIMS), Ganga Ram Hospital and Maulana Azad Medical College in New Delhi, Manipal Medical College, LV Prasad Eye Institute, Niche Centre for Regenerative Medicine, Reliance Life Sciences and many more are fine-tuning their clinical skills in this niche segment to offer stem cell therapy on a commercial scale.

The global market for stem cell therapy is expected to be \$20 billion by 2010, as per a Frost & Sullivan study. India is expected to garner 5% of this by next year.

From a few institutes two years back, today over 40 institutions are involved in stem cell research and therapy. On its part, the government has been actively engaged in major capacity building efforts to create an inter-connected, well managed stem cell research and therapy enterprise in the country.

Globally too, momentum is building up. Pfizer has said it would form a regenerative medicine unit that would collaborate with researchers at drug developers and universities worldwide. GlaxoSmithKline is close to rolling out a five-year collaborative deal with the Harvard Stem Cell Institute. And in a major regulatory reprieve, US Food and Drug Administration (USFDA) has permitted a US healthcare major Genex to begin testing a treatment using embryonic stem cells that could fix major spinal cord injuries in people, thereby marking a major milestone towards commercialisation.

For one, healthcare analysts and clinicians are gung ho on the business prospects emerging from stem cell therapy in the country. It is estimated that close to 20 million will go in for stem cell therapies every year in India.

Not surprising, a large number of medical research institutes, pharmaceutical and biotech companies and hospital chains have intensified focus on research and therapy in this area.

Take for instance diabetes, says Anoop Misra, who is spearheading stem cell therapy

Graphs by SURENDR

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