EDITORIAL

Role of Stem Cells in Surgery - the Way Forward

Sana Zeeshan, Mohammad Fazlur Rahman, Saleem Islam, Syed Ather Enam

Recently there has been a lot of interest in stem cells. The ability to repair and regenerate, which then helps restore form and function, has been a quest for science for many years and represents the holy grail of medicine. Stem cells can regenerate, and this ability and recent advancements have increased the interest in stem cells.

In 1996, Dolly the sheep was cloned[1] using stem cells from the mammary gland. This iconic event increased interest in stem cells and led to a tremendous increase in research being done.

Stem cells can be broadly divided into embryonic stem cells (ESC), induced pluripotent stem cells (iPSC) and adult stem cells. Both ESCs and iPSCs can reproduce and differentiate into other cell lines[2]. Their clinical usage is however limited, as there are concerns about tumour formation, ethical considerations, immunogenicity (ESC) and genetic manipulation (iPSC)[3].

Adult stem cells are multipotent and have fewer ethical concerns. These include Haematopoietic Stem Cells (Blood Stem Cells), Mesenchymal Stem Cells, Neural Stem Cell, Epithelial Stem Cells and Skin Stem Cells. Haematopoietic stem cells were the first to be used to treat diseases and are derived from bone marrow, peripheral blood, and embryonic blood. They have been used to treat diseases like leukaemia, lymphoma and liver cirrhosis[4], as well as a host of over malignancies.

There is now renewed interest in Mesenchymal stem cells (MSC), due an abundance of MSC compared to other sources. Prime sources of MSCs include bone marrow and adipose tissue. There is plenty of adipose tissue in many organs, and their removal leads to minimal morbidity as well as an excellence of cells volume[5].

As the rest of the world, in South Asia, clinical use of stem cells has raised multiple ethical and legal implications, with centers adopting a more business like attitude to this new arena. Patients and families search online for new treatments that can help them and can find centers advertising stem cell based therapy as a 'cure-all' to make a quick buck. Moreover, these patients may end up seeking stem cell treatment from unregulated places, which leads to wasted time and money and potential for severe complications. Increasing publicity and lack of legislation in Pakistan about the use of stem cell treatments are emerging threats that need to be addressed. Currently, the only FDA approved stem cells are haematopoietic stem cells for the treatment of blood disorders and cancers.

There is a need to establish more research centres and more studies regarding stem cells role in treating incurable diseases in Pakistan. Legal and ethical considerations need to be reviewed while posting any content on social media for public awareness.

References

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Department of Surgery, Aga Khan University, Karachi, Pakistan.
Correspondence: Sana Zeeshan. Email: sana.zeeshan@aku.edu

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