Stem Cell and Medicine Research Literatures

Ma Hongbao [1], Margaret Young [2], Yang Yan [1]

[1] Brookdale Hospital, Brooklyn, New York 11212, USA; [2] Cambridge, MA 02138, USA
ma8080@gmail.com

Abstract: The stem cell is the origin of an organism's life that has the potential to develop into many different types of cells in life bodies. In many tissues stem cells serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive. When a stem cell divides, each new cell has the potential either to remain a stem cell or become another type of cell with a more specialized function, such as a red blood cell or a brain cell. This article introduces recent research reports as references in the stem cell and medicine related studies.

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1. Introduction

The stem cell is the origin of an organism's life that has the potential to develop into many different types of cells in life bodies. In many tissues stem cells serve as a sort of internal repair system, dividing essentially without limit to replenish other cells as long as the person or animal is still alive. When a stem cell divides, each new cell has the potential either to remain a stem cell or become another type of cell with a more specialized function, such as a red blood cell or a brain cell. This article introduces recent research reports as references in the related studies.

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Bahadur, G. "Ethics of testicular stem cell medicine." Hum Reprod. 2004 Dec;19(12):2702-10. Epub 2004 Oct 15.

The ethical issues raised by advances in reproductive technology allowing the transplantation of testicular stem cells to enable infertile men and cancer patients, including the pre-pubertal, to have children, and to provide new contraceptive prospects for fertile men are discussed. Consideration of respect for the patient's autonomy, the need for informed consent and the health of any offspring resulting from such a procedure are included. Topics covered include: the problems raised by cases needing consent for the transplantation of testicular stem cells from pre-pubertal and adolescent patients; the legal status of stem cells; the arguements for treating such tissue as property which might serve as a means of guaranteeing respect for patients' rights in disputed cases; aspects of patents and the ethics of allowing commercial traffic of such material; questions relating to health and safety, as well as xenotransplantation technology in humans; and posthumous procurement use of germ cells from minors. Proposals are made to enhance informed and effective consent, while supporting patient determination, choice, autonomy and technological advances. The paper appeals to the emerging EU directives in relation to tissue procurement, storing and use of tissue and cells to adopt a pragmatic and meaningful position which will help enhance patient determination and autonomy in relation to the emerging technologies in reproductive medicine, whilst providing a pragmatic way forward for fertility clinics and laboratories to function.

Bradley, J. A., E. M. Bolton, et al. "Stem cell medicine encounters the immune system." Nat Rev Immunol. 2002 Nov;2(11):859-71.

Recent progress in deriving human embryonic stem (hES) cells and defining their capacity to differentiate has inspired hope that they could become a source of replacement cells for damaged or diseased tissues. We review the immunological barriers to transplanting hES cells and consider several potential solutions, including stem-cell banking, modification of the immunogenicity of donor cells and induction of tolerance to the graft. We evaluate the probable efficacy of these approaches with a view to facilitating the use of hES cells in clinical practice.

Kiatpongsan, S., Y. Tannirandorn, et al. "Introduction to stem cell medicine." J Med Assoc Thai. 2006 Jan;89(1):111-7.

Embryonic stem cell is the promising novel therapeutic tool for various degenerative diseases and tissue injuries. With the concept of cell and tissue therapy, many chronic disorders will be curable. The present article provides basic knowledge of stem cell in areas of definition, classification and future clinical applications. In addition, stem cell application is not only focusing on regenerative purpose, but also

concentrating on more understanding about the early human development and the pathophysiology of genetic diseases at the cellular level. However, there are some technical problems and ethical concern that should be resolved before applying stem cells into clinical practice.

Lau, D., U. Ogbogu, et al. Stem cell clinics online: the direct-to-consumer portrayal of stem cell medicine, Cell Stem Cell. 2008 Dec 4;3(6):591-4. doi: 10.1016/j.stem.2008.11.001.

Despite the immature state of stem cell medicine, patients are seeking and accessing putative stem cell therapies in an "early market" in which direct-to-consumer advertising via the internet likely plays an important role. We analyzed stem cell clinic websites and appraised the relevant published clinical evidence of stem cell therapies to address three questions about the direct-to-consumer portrayal of stem cell medicine in this early market: What sorts of therapies are being offered? How are they portrayed? Is there clinical evidence to support the use of these therapies? We found that the portrayal of stem cell medicine on provider websites is optimistic and unsubstantiated by peer-reviewed literature.

Rosemann, A. "Standardization as situation-specific achievement: regulatory diversity and the production of value in intercontinental collaborations in stem cell medicine." Soc Sci Med. 2014 Dec;122:72-80. doi: 10.1016/j.socscimed.2014.10.018. Epub 2014 Oct 7.

The article examines the role and challenges of scientific self-governance and standardization in inter-continental clinical research partnerships in stem cell medicine. The paper shows that - due to a high level of regulatory diversity - the enactment of internationally recognized standards in multi-country stem cell trials is a complex and highly situation-specific achievement. Standardization is imposed on a background of regulatory, institutional and epistemic-cultural heterogeneity, and implemented exclusively in the context of select clinical projects. Based on ethnographic data from the first trans-continental clinical trial infrastructure in stem cell medicine between China and the USA, the article demonstrates that locally evolved and international forms of experimental clinical research practices often co-exist in the same medical institutions. Researchers switch back and forth between these schemas, depending on the purposes of their research, the partners they work with, the geographic scale of research projects, and the contrasting demands for regulatory review, that result from these differences. Drawing on Birch's analysis of the role of standardization in international forms of capital production in the biosciences, the article argues that the integration of local knowledge institutions into the global bioeconomy does not necessarily result in the shutting down of localized forms of value production. In emerging fields of medical research, that are regulated in highly divergent ways across geographical regions, the coexistence of distinct modes of clinical translation allows also for the production of multiple forms of economic value, at varying spatial scales. This is especially so in countries with lenient regulations. As this paper shows, the long-standing absence of a regulatory framework for clinical stem cell applications in China, permits the situation-specific adoption of internationally recognized standards in some contexts, while enabling the continuation of localized forms of value production in others.

Watt, S. M. and M. Contreras "Stem cell medicine: umbilical cord blood and its stem cell potential." Semin Fetal Neonatal Med. 2005 Jun;10(3):209-20. Epub 2005 Mar 25.

The ultimate aim of stem cell research is to improve patient outcomes and quality of life, and/or to effect a cure for a variety of inherited or acquired diseases. Improved treatments rely on developments in stem cell therapies and the discovery of new therapeutic drugs that regulate stem cell functions. These complement each other for the repair, regeneration and replacement of damaged or defective tissues. Stem cells may be sourced or derived from blood and tissues postnatally ('adult' stem cells), from the fetus (fetal stem cells) or from the blastocyst in the developing embryo prior to implantation (embryonic stem cells), each forming a unique component of the revolution in stem cell research and therapies. This review will concentrate on recent developments in the use of haemopoietic stem cells from umbilical cord blood for the transplantation of patients with haematological disorders. It will conclude with a summary of the potential of other umbilical cord blood-derived stem cells for tissue repair or regeneration.

The above contents are the collected information from Internet and public resources to offer to the people for the convenient reading and information disseminating and sharing.

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