

Original Research

Stem Cell Research & Abortions

¹Saranjit Kaur, ²Reena Rani, ³Baljinder Kaur, ⁴Deepti, ⁵Avtar Singh

¹MAS Graduate, Canada;

²Private Practitioner at Kinder Denticles, New Delhi, India;

³Private Practitioner, Jagroan, Punjab, India;

⁴Private Practitioner, New Delhi, India;

⁵Dental Assistant, Canada

ABSTRACT:

Is it true that embryos are aborted for stem cells? Stem cell can be collected from embryos or adult individual. In this paper, my purpose is to explain in detail what is stem cell, from where it originates, what are its type and uses. To clear all the myths and misconceptions that were and are appearing in regenerative medicine in relation to embryo abortion. Moreover, how the research of stem cell has and can affect diagnosis and treatment of different diseases. In my thoughts stem cell research from leftover embryos doesn't have relation to ethical issues of abortion of embryo. Also, induced pluripotent cell and adult cells can be used more for stem cell research because these cells have same characteristics and more benefits.

Key words: Stem cell, Embryonic stem cell, Pluripotent, IVF (In vitro fertilization), Induced pluripotent cell, Vitro, Ethics, replication, multipotent, regenerate, myths, misconceptions, Spermatozoa, Ovum, cloning, embryo.

Received: 19 August, 2021

Accepted: 24 September, 2021

Corresponding Author: Reena Rani, Private Practitioner at Kinder Denticles, New Delhi, India

This article may be cited as: Kaur S, Rani R, Kaur B, Deepti, Singh A. Stem Cell Research & Abortions. Int J Res Health Allied Sci 2021; 7(5): 106-108.

INTRODUCTION

Stem cell, a cell which replicates a copy of its originality. Stem cell is true 'stem cell' if it has these two properties: self renewing the tissues unlimitedly and replicating a special form of cell that is healthy for body. For example, in Cancer there is uncontrolled replication of cells, but its unhealthy for body; so those cells don't fall under this category (Biehl, J. K., 2009).

The origin of these cell can be from, embryo and adult tissues. Usually, 3-4 days of embryo have abundant of stem cells, because its growing bud. And adult tissue has stem cells as well, but the form is different. The latest research has showed results how adult tissue can form or transfer into embryo type stem cell. Scientists had made this 2-way formulation possible, by there experimentation and named these transformed cells as Induced Pluripotent Cell (Biehl, J. K., 2009).

Stem Cell have characteristic to form and repair damaged tissues. To understand this better, let me describe about two types of stem cells according to characteristics of cell. First, pluripotent, can form any tissue of human body. They can differentiate into

different cells of body such as brain, heart, liver etc. Second, is multipotent, these cells can replicate restricted population of cells.

According to developmental stage, stem cell can be classified as Embryo Stem cell, Adult Stem cell and Induced Pluripotent stem cell (Biehl, J. K., 2009).

After brief description of stem cell, let us know more about its uses now. As mentioned above, that stem cells have ability to form and regenerate special type of cell (Biehl, J. K., 2009). Because of this ability, detail study about disease, diagnosis and treatment of any disease can be done accurately. Even after the study of individual stem cell, personalized medicine can be made, and clear understanding of how individual body functions can help in individual health. In case of any organ failure or injured tissue, a transplant of pluripotent cell can treat the patient and may cure the disease (Biehl, J. K., 2009).

There is myths and misconception, that for embryo stem cell, fetus is aborted for the purpose of research/experimentation. To which I disagree, for support I would share some facts and detailed information, that how fertility clinics play important

role in stem cell research. And, how leftover is useful in stem cell research, a new treatment, regenerative medicine.

FERTILITY CLINICS

The left overs of In Vitro fertilisation (IVF) procedure provide human embryonic vegetative cell, which are 4-5 days old. A combination of spermatozoa (man's sperm) and ovum (women egg) in lab dish by researchers leads the IVF procedure, few eggs will become fertilized. After 5 days, egg will divide and become a hollow ball known as blastocyst (consist of 100 cells), which is as small as dot of 'i'. Then, these 5 days old embryos are implanted into woman, to make her pregnant (CIRM,2018).

Every cycle of IVF produces abundance of blastocyst. Out of which few are implanted into women and rest are freeze in IVF clinic freezer. If the implantation is successful, then they decide what to do with remaining freeze embryos, which can be:

- Continue to pay for storing the embryos in freezer.
- Defrost the embryos, which damages embryo.
- Donate the embryos for adoption (few people choose this)
- Donate the frozen embryos for experimentation/research. "These donated embryos are the source of human embryonic stem cell lines" (CIRM,2018).

Also, embryos having malformations, genetic defects, would leave two options for parents and fertility clinics: either to discard the embryo or donate embryo to Stem cell research. All the state, national and international regulations are followed donor as well is explained to ensure they understood completely about stem cell research and sign the consent (CIRM, 2018).

Sometimes women are paid or compensated for donating eggs, like reimbursement for cost of travel to clinic. Most jurisdiction do reimbursement, and some pay for IVF services to be provided to egg donors (CIRM,2018).

THE CIHR GUIDELINES MARCH 2001

- The embryos created for reproductive purpose in Fertility clinics, which are not required anymore can be used. The cloning of human embryo and creation of human embryo for research is prohibited.
- Stem cells are not allowed for reproduction purposes.
- Mixing non-human stem cell to human embryo is not permitted.
- The donor must sign the informed consent, no bribe should be offered for any reproductive material (CIHR,2001).
- Any stem cells that are imported to Canada for stem cell research should follow all the CIHR guidelines, then only these cells can be used here

in Canada (CIHR,2001).

STEM CELL RESEARCH AND EMBRYO HUMAN RIGHTS

There are two statements which make difference: Creation of embryo and Destruction of embryo (Harman E.,2007). In this research, embryos are not created for research basis therefore no issue or harm in moral status as embryos are created by fertility clinics for clients to conceive a baby. As these create embryo are no longer required for their use they can donate according to wish.

Secondly, Destruction of embryo, if material is no longer needed Fertility Clinics must defrost it or parents need to pay to keep embryo refrigerated, defrosting embryo would ultimately kill the embryo without causing any harm or benefit to anyone else (CIRM,2018). But this leftover can make a difference if it is donated and used for diseased patients to treat them by stem cell researchers (Annas J. G.,1999). Following the CIHR guidelines, researchers are neither creating nor going beyond the guidelines (Robertson J. A., 2001).

Embryo and fetus have no legal right, fetus and mother are considered as one human being. Fetus is eligible for rights once he takes first breath of his life (Abortion Rights Coalition of Canada, 2018).

So, I feel there should be no ethical dilemmas for use of leftover embryo in stem cell research. In this case, researchers are not creating new embryos but using the leftover, which are no longer useful in Fertility clinics by parents.

ADULT STEM CELL RESEARCH

The British Medical Journal research on adult stem cell, suggest that ductal tissue extracted from human cadavers can be cultured to create functioning islet cells. This cultured tissue may lead to autologous pancreatic transplants, better than relying on fetus stem cell (Konsen A. H. ,2002).

The bone marrow stem cells taken from children and adults can give brain and liver cell precursors, as well muscle cells of heart, skeletal and smooth. The adult stem cells are easier to manage, free from ethical concerns that embryonic and fetus stem cell have (Konsen A. H. ,2002).

As sample of cells taken from embryo can react in recipients' body (immune system) after transplant. Patients own cell from body after experimentation and transfer into Induced Pluripotent cell can prevent this concern (Konsen A. H. ,2002).

McGill University researchers said "isolated stem cells from the skin of adult rodents that can become neurons, glia, smooth muscle cells, and fat cells. Human studies have indicated that similar cells are present in adult human skin" (Toma J.G, 2001). So why to rely on embryo stem cells from fertility clinics, if other options are available.

"The ability to rejuvenate specific cells in the body opens up a dazzling array of possibilities. Doctors

could grow skin grafts for burn victims using their own skin, insulin-producing cells for diabetics, or muscle tissue for sufferers of muscular dystrophy” (Konsen A. H. ,2002).

CONCLUSION

In a nutshell, if IVF leftover is useful for existing life’s in this world why not to get that advantage to reduce pain of others, who already have a life. Moreover, researchers are using leftover under informed consent by giving complete information about stem cell research. If something that is waste for one party and beneficial for second party which directly would benefit many other life’s why we should not utilize that. By law also, fetus has all human rights when he takes first breath of there life.

As well if limited Embryo stem cell is available; other options are available now such as Induced Potential Cell and adult cells, which have same benefits as embryo cells scientists should go for second option. To support this statement, I would like to talk about researches done on adult cell by McGill University, British medical Journal research on adult cell which states how adult cell play equivalent role as embryo cell in Stem cell research. To this research, I think its great idea without causing any risk such as viral disease transmission to patient’s health.

REFERENCE

A. BIBLIOGRAPHY / LIST OF REFERENCES

1. Biehl, J. K., & Russell, B. (2009). Introduction to stem cell therapy. *The Journal of cardiovascular nursing*, 24(2), 98–105.
2. Robertson J. A. (2001). Human embryonic stem

- cell research: ethical and legal issues. *Nature Reviews Genetic*, 74–78.
3. Annas J. G., Caplan A., Elias S. (1999). *Stem cell politics, ethics and medical progress*. *Nature Medicine* 1339–1341.
4. Pfeffer N. (2008). What British women say matters to them about donating an aborted fetus to stem cell research: A focus group study. *Social Science & Medicine*. 2544-2554
5. Abortion Rights Coalition of Canada (2018). *Fetal Rights in Canada*. Available at: <http://www.arcc-cdac.ca/postionpapers/63-fetal-rights-in-canada.pdf>, accessed on July 23, 2019
6. Konsen A. H. (2002). *Are we killing the weak to heal the sick?* Available at http://www.nature.com/cgi-taf/DynaPage.taf?file=/ncb/journal/v3/n9/full/ncb0901_778.html&filetype=pdf
7. Toma J.G, et al. (2001). *Isolation of Multipotent Adult Stem Cells from the Dermis of Mammalian Skin*, 778-784.
8. Harman, E. (2007). How is the ethics of stem cell research different from the ethics of abortion? *Metaphilosophy*, 38(2-3), 207-225.

B. INTERNET SOURCES

1. California Institute for Regenerative Medicine (2018). ‘*Myths and Misconceptions About Stem Cell Research*’, Source URL: <https://www.cirm.ca.gov/patients/myths-and-misconceptions-about-stem-cell-research>, accessed on July 17, 2019.
2. CHIR (2001). Available at: <https://www.cbc.ca/news/health/stem-cells-faqs-1.777571>, accessed on July 19, 2019.