Embryonic Stem Cell Research: An Ethical Dilemma

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Keywords: embryo, bioethics, reproductive ethics, stem cell research

INTRODUCTION

In November 1998, two teams of U.S. scientists confirmed successful isolation and growth of stems cells obtained from human fetuses and embryos. Since then, research that utilizes human embryonic cells has been a widely debated, controversial ethical issue. Human embryonic cells possess the ability to become stem cells, which are used in medical research due to two significant features. First, they are unspecialized cells, meaning they can undergo cell division and renew themselves even with long periods of inactivity. Secondly, stem cells are pluripotent, with the propensity to be induced to become specified tissue or any "organ-specific cells with special functions" depending on exposure to experimental or physiologic conditions, as well as undergo cell division and become cell tissue for different organs.

The origin of stem cells themselves encapsulates the controversy: embryonic stem cells, originate from the inner cell mass of a blastocyst, a 5-day pre-implantation embryo. The principal argument for embryonic stem cell research is the potential benefit of using human embryonic cells to examine or treat diseases as opposed to somatic (adult) stem cells. Thus, advocates believe embryonic stem cell research may aid in developing new, more efficient treatments for severe diseases and ease the pain and suffering of numerous people. However, those that are against embryonic stem cell research believe that the possibility of scientific benefits of research do not outweigh the immoral action of tampering with the natural progression of a fetal development and interfering with the human embryo's right to live. In light of these two opposing views, should embryonic stem cells be used in research? It is not ethically permissible to destroy human embryonic life for medical progress.

ANALYSIS

A. Personhood and the Scientific Questionability of Embryonic Stem Cell Research

The ethics behind embryonic stem cell research are controversial because the criteria of 'personhood' is "notoriously unclear." Personhood is defined as the status of being a person, entitled to "moral rights and legal protections" that are higher than living things that are not classified as persons. Thus, this issue touches on existential questions such as: *When does life begin?* and *What is the moral status that an embryo possesses?* There is a debate on when exactly life begins in embryonic development and when the individual

receives moral status. For example, some may ascribe life starting from the moment of fertilization, others may do so after implantation or the beginning of organ function. However, since the "zygote is genetically identical to the embryo," which is also genetically identical to the fetus, and, by extension, identical to the baby, inquiring the beginning of personhood can lead to an occurrence of the Sorites paradox, also acknowledged as "the paradox of the heap."

The paradox of the heap arises from vague predicates in philosophy. If there is a heap of sand and a grain is taken away from that heap one by one, at what point will it no longer be considered a heap – what classifies it as a heap? The definition of life is similarly arbitrary. When, in the development of a human being, is an embryo considered a person with moral standing? The complexity of the ethics of embryonic stem cell research, like the Sorites paradox, demonstrates there is no single, correct way to approach a problem; thus, there may be multiple different solutions that are acceptable. Whereas the definition of personhood cannot be completely resolved on a scientific basis, it serves a central role in the religious, political, and ethical differences within the field of embryonic stem cell research. Some ethicists attempt to determine what or who is a person by "setting boundaries" (Baldwin & Capstick, 2007).

Utilizing a functionalist approach, supporters of embryonic stem cell research argue that to qualify as a person, the individual must possess several indicators of personhood, including capacity, self-awareness, a sense of time, curiosity, and neo-cortical function. Proponents argue that a human embryo lacks these criteria, thereby is not considered a person and thus, does not have life and cannot have a moral status. Supporters of stem cell research believe a fertilized egg is just a part of another person's body until the cell mass can survive on its own as a viable human. They further support their argument by noting that stem cell research uses embryonic tissue before its implantation into the uterine wall. Researchers invent the term "pre-embryo" to distinguish a pre-implantation state in which the developing cell mass does not have the full respects of an embryo in later stages of embryogenesis to further support embryonic stem cell research. Based on this reductionist view of life and personhood, utilitarian advocates argue that the result of the destruction of human embryos to harvest stem cells does not extinguish a life. Further, scientists state that any harm done is outweighed by the potential alleviation of the suffering enduring by tremendous numbers of people with varying diseases. This type of reasoning, known as Bentham's Hedonic (moral) calculus, suggests that the potential good of treating or researching new cures for ailments such as Alzheimer's disease, Parkinson's disease, certain cancers, etc. outweighs any costs and alleviate the suffering of persons with those aliments. Thus, the end goal of stem cell use justifies sacrificing human embryos to produce stem cells, even though expending life is tantamount to murder. Opponents of embryonic stem cell research would equate the actions done to destroy the embryos as killing. Killing, defined as depriving their victims of life, will therefore reduce their victims to *mere* means to their own ends. Therefore, this argument touches on the question: if through the actions of embryotic stem cell research is "morally indistinguishable from murder?" (Outka, 2013). The prohibition of murder extends to human fetuses and embryos considering they are potential human beings. And, because both are innocent, a fetus being aborted and an embryo being disaggregated are direct actions with the intention of killing. Violating the prohibition of murder is considered an intolerable end. We should not justify this evil even if it achieves good. Under the deontological approach, "whether a situation is good or bad depends on whether the action that brought it about was right or wrong," hence the ends do not justify the means. Therefore, under this feeble utilitarian approach, stem cell research proceeds at the expense of human life than at the expense of personhood.

One can reject the asserted utilitarian approach to stem cell research as a reductionist view of life because the argument fails to raise ethical concerns regarding the destruction embryonic life for the possibility of developing treatments to end certain diseases. The utilitarian approach chooses potential benefits of stem

cell research over the physical lives of embryos without regard to the rights an embryo possesses. Advocates of embryonic stem cell research claim this will cure diseases but there is a gap in literature that confirms how many diseases these cells can actually cure or treat, what diseases, and how many people will actually benefit. Thus, killing human embryos for the potentiality of benefiting sick people is not ethically not ethically permissible.

Where the argument of personhood is concerned, the development from a fertilized egg (embryo) to a baby is a continuous process. Any effort to determine when personhood begins is arbitrary. If a newborn baby is a human, then surely a fetus just before birth is a human; and, if we extend a few moments before that point, we would still have a human, and so on all the way back to the embryo and finally to the zygote. Although an embryo does not possess the physiognomies of a person, it will nonetheless become a person and must be granted the respect and dignity of a person. Thus, embryotic stem cell research violates the Principle of "Full Human Potential," which states: "Every human being […] deserves to be valued according to the full level of human development, not according to the level of development currently achieved." As technology advances, viability outside the womb inches ever closer to the point of inception, making the efforts to identify where life begins after fertilization ineffectual. To complicate matters, as each technological innovation arrives, stem-cell scientists will have to re-define the start of life as many times as there are new technological developments, an exhausting and never-ending process that would ultimately lead us back to moment of fertilization. Because an embryo possesses all the necessary genetic information to develop into a human being, we must categorically state that life begins at the moment of conception. There is a gap in literature that deters the formation of a clear, non-arbitrary indication of personhood between conception and adulthood. Considering the lack of a general consensus of when personhood begins, an embryo should be referred to as a person and as morally equivalent to a fully developed human being.

Having concluded that a human embryo has the moral equivalent of a fully-fledged human being, this field of research clearly violates the amiable rights of personhood, and in doing so discriminates against pre-born persons. Dr. Eckman asserts that "every human being has a right to be protected from discrimination." Thus, every human, and by extension every embryo, has the right to life and should not be discriminated against for "developmental immaturity." Therefore, the field of embryonic stem cell research infringes upon the rights and moral status of human embryos.

B. Principle of Beneficence in Embryonic Stem Cell Research

The destruction of human embryos for research is not ethically permissible because the practice violates the principle of beneficence depicted in the Belmont Report, which outlines the basic ethical principles and guidelines owed to human subjects involved in research. Stem cell researchers demonstrate a lack of respect for the autonomy and welfare of the human embryos sacrificed in stem cell research.

While supporters of embryonic stem cell research under the utilitarian approach argue the potential benefits of the research, the utilitarian argument however violates the autonomy of the embryo and its human rights, as well as the autonomy of the embryo donors and those that are Pro-Life. Though utilitarian supporters argue on the basis of rights, they exclusively refer to the rights of sick individuals. However, they categorically ignore the rights of embryos that they destroy to obtain potential disease curing stem cells. Since an embryo is regarded as a human being with morally obligated rights, the Principle of Beneficence is violated, and the autonomy and welfare of the embryo is not respected due to the destruction of an embryo in stem cell research. Killing embryos to obtain stem cells for research fails to treat embryos as ends in an of themselves. Yet, every human ought to be regarded as autonomous with rights that are equal to every other human being. Thus, the welfare of the embryo is sacrificed due to lack of consent from the subject.

The Principle of Beneficence is violated when protecting the reproductive interests of women in infertility treatment, who are dependent on the donations of embryos to end their infertility. Due to embryonic stem cell research, these patients' "prospects of reproductive success may be compromised" because there are fewer embryos accessible for reproductive purposes. The number of embryos necessary to become fully developed and undergo embryonic stem cell research will immensely surpass the number of available frozen embryos in fertility clinic, which also contributes to the lack of embryos available for women struggling with infertility. Therefore, the basis of this research violates women's reproductive autonomy, thus violating the Principle of Beneficence.

It is also significant to consider the autonomy and welfare of the persons involved. The autonomous choice to donate embryos to research necessitates a fully informed, voluntary sanction of the patient(s), which poses difficulty due to the complexity of the human embryonic stem cell research. To use embryos in research, there must be a consensus of agreement from the mother and father whose egg and sperm produced the embryo. Thus, there has to be a clear indication between the partners who has the authority or custody of the embryos, as well as any "third party donors" of gametes that could have been used to produce the embryo because these parties' intentions for those gametes may solely have been for reproductive measures only. Because the researchers holding "dispositional authority" over the embryos may exchange cell lines and its derivatives (i.e., genetic material and information) with other researchers, they may misalign interests with the persons whose gametes are encompassed within the embryo. This mismatch of intent raises complications in confidentiality and autonomy.

Lastly, more ethical complications arise in the research of embryonic stem cells because of the existence viable alternatives that to not destroy human embryos. Embryonic stem cells themselves pose as a higher health risk than adult stem cells. Embryonic stem cells have a higher risk of causing tumor development in the patient's body once the cells are implanted due to their abilities to proliferate and differentiate. Embryonic stem cells also have a high risk of immunorejection, where a patient's immune system rejects the stem cells. Since the embryonic stem cells are derived from embryos that underwent *in vitro* fertilization, when implanted in the body, the stem cell's marker molecules will not be recognized by the patient's body, resulting in the destruction of the stem cells as a defensive response to protect the body (Cahill, 2002). With knowledge of embryonic stem cells having higher complications than the viable adult stem cells continued use of embryonic stem cells violates the Principle of Beneficence not only for the embryos but for the health and safety of the patients treated with stem cells. Several adult stem cell lines ("undifferentiated cells found throughout the body") exist and are widely used cell research. The use of adult stem cells represents research that does not treat human beings as means to themselves, thus, complying with the Principle of Beneficence. This preferable alternative considers the moral obligation to discover treatments, and cures for life threating diseases while avoiding embryo destruction.

CONCLUSION

It is not ethically permissible to destroy human embryonic life for medical progress due to the violations of personhood and human research tenets outlined in the Belmont Report. It is significant to understand the ethical implications of this research in order to respect the autonomy, welfare, beneficence, and basic humanity afforded to all parties involved. Although embryonic stem cell research can potentially provide new medical advancements to those in need, the harms outweigh the potential, yet ill-defined benefits. There are adult stem cell alternatives with equivalent viability that avoid sacrificing embryos. As society further progresses, humans must be cautious of compromising moral principles that human beings are naturally entitled to for scientific advancements. There are ethical boundaries that are crossed when natural

processes of life are altered or manipulated. Though there are potential benefits to stem cell research, these actions are morally and ethically questionable. Thus, it is significant to uphold ethical standards when practicing research to protect the value of human life.

References

Shamblott, M. J., J. Axelman, S. Wang, E. M. Bugg, J. W. Littlefield, P. J. Donovan, P. D. Blumenthal, G. R. Huggins, and J. D. Gearhart. "Derivation of Pluripotent Stem Cells from Cultured Human Primordial Germ Cells." *Proceedings of the National Academy of Sciences* 95, no. 23 (November 10, 1998): 13726–31. doi:10.1073/pnas.95.23.13726.

National Institutes of Health, U.S. Department of Health and Human Services. "Stem Cell Basics I." *Stem Cell Information*, 2016. https://stemcells.nih.gov/info/basics/1.htm.

Kitwood, Thomas Marris., Clive Baldwin, and Andrea Capstick. *Tom Kitwood on Dementia: A Reader and Critical Commentary*. Maidenhead, Berkshire: McGraw-Hill/Open University Press, 2007.

University of Michigan. "Stem Cell Research: Frequently Asked Questions," 2013. http://www.stemcellresearch.umich.edu/overview/faq.html#section2.

EuroStemCell. "Origins, Ethics and Embryos: The Sources of Human Embryonic Stem Cells," 2016. https://www.eurostemcell.org/origins-ethics-and-embryos-sources-human-embryonic-stem-cells.

Perry, David L. "Some Issues in Contemporary Neurological Science and Technology," 2011. https://www.scu.edu/ethics/focus-areas/bioethics/resources/ethics-and-personhood/.
Swirsky, E. "Week Fourteen Unit: Minute Paper 5 [Blackboard Assignment]," 2018.
O'Mathúna, DP. "Personhood in Bioethics and Biomedical Research." *Research Practitioner* 7 (2006): 167–74.

Grobstein, C. "External Human Fertilization." *Scientific American* 240, no. 6 (June 1979): 57–67.

Mastin, L. "Deontology," 2009. https://www.philosophybasics.com/branch_deontology.html.

Spitzer, Robert. "Introduction and Principles of Ethics." In *Ten Universal Principles: A Brief Philosophy of the Life Issues*, xi–xii, 1-3, 20-29. San Fransisco, CA: Ignatius Press, 2011. https://www.catholiceducation.org/en/religion-and-philosophy/philosophy/introduction-amp-principles-of-ethics.html.

Eckman, Jim. "Human Embryonic Stem Cell Research." *Issues In Perspective*, 2011. https://graceuniversity.edu/iip/2011/05/14-2/.; Eckman, Jim. "The Devaluing of Life in America." *Issues In Perspective*, 2015. https://graceuniversity.edu/iip/2015/09/the-devaluing-of-life-in-america/.