ETHICAL CONSIDERATIONS REGARDING THE MORAL STATUS OF THE HUMAN EMBRYO

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Abstract
The moral status of the human embryo is still a controversial problem, regarding medical, philosophically and religious context. The embryo is considered as the principal element of the human biotechnology and his ontological status is essential for our attitude towards embryos in case of abortion, prenatal diagnosis, in vitro fertilization, embryo manipulation, therapeutic cloning, artificial reproduction, embryo research and genetic engineering. The legitimacy of the embryo studies is still a subject of debate in relation to the moral status of an embryo; the 14-th day from conception seems to represent the mostly accepted border.

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The moral status of the human embryo is considered a controversial problem, in terms of medical, philosophical and religious context. Since embryo biotechnology becomes a subject facing a large social concern, we have to accept the idea of its possible involvement in deep changing of the human nature. The ontological status of the embryo is essential for our attitude towards embryos in case of abortion, prenatal diagnosis, in vitro fertilization, embryo manipulation, therapeutic cloning, artificial reproduction, embryo research and genetic engineering.

The different ways of embryo conception, its particular developmental stages, correlated with new possibilities of transforming the embryo’s distinguishing features represent a priority for the medical research.

Since Middle Ages, doctors, theologians, philosophers and defenders have been taken into consideration four moments when the embryo can come to life- the time of conception, after its formation (widely accepted), the moment in which the foetal movements are detectable or at birth. [1]

In normal conditions, the embryos are the result of the conception or fertilization process-the fusion of a human egg and sperm, which is very rapid, in less than a second. The result is a zygote, with a different configuration, able to develop as a distinct structure, in a continuous, gradual and coordinated manner. [2] Theoretically, it is possible to produce human embryos in two artificial processes, i.e. the embryonic division and nuclear transfer. In the first case, the result is an early embryo with cells which can generate all the cellular types of the human body, capable to generate a new distinct embryo. In the nuclear transfer, the cell nucleus is replaced with the nucleus of an adult donor cell, which contains the DNA. A new clone forms when the egg division starts.

Cloning is the process ensuring the formation of a new cell or a new organism with the same nuclear genome as another cell or organism. [3] The human cloning can provide a genetically identical copy of a human being. [4]

The therapeutic cloning becomes available for regenerative medicine, in case of autologous transplant, to prevent the rejection of transplanted structures which possess genetically identical cells. [5]

Ethical considerations allowed us to sustain that the reproductive cloning regards the implantation and the development of the embryo; the therapeutic cloning leads to the destruction of the embryos. The legitimacy of embryo research is closely related to the moral status of the human embryo. Despite the large number of studies, they fail to provide an accurate answer to the questions: when and based on what criteria the human embryo present a moral status?

One might expect that human embryos are not persons, so their moral status can be considered inferior and does not offer the right of a human being. Other opinions sustain the fact that human embryos include the human nature and become rational, even if for a time they cannot assert it. Their moral status evolves in a direct ratio to their stage of development.

The problem of the embryo in the first stages of development was thoroughly analyzed by the American gynaecologists. In 1930, they proposed
the term of pre-embryo or pre-implantation embryo for the period between the moment of conception and the end of nidation. The limit of 14 days for the research on pre-implantation embryos is generally accepted because, in the absence of any differentiation of the foetal tissues, it is difficult to find a reasonable border. Despite these arguments, it remains an arbitrary border, which can be sometimes re-evaluated.

The embryos used in research or for therapeutic purposes have in vitro origin, a part of them being sampled from maternal sources or abortuses. They are divided in two main categories: supernumerary embryos, which are donated for pre-implantation by couples undergoing therapy and embryos created only for research purposes. In vitro embryos can be normal, conceived for the intrauterine implantation, or they are considered “reserve embryos”, as a result of a hormonal therapy responsible for superovulation, in order to multiply the chances of a pregnancy.

Some embryos can be sampled from women who intend to donate their eggs before sterilization. The egg cells will be fertilized and the resulted “research embryos” are included in different studies or become a source for cell/tissue sampling for therapeutic research.

Embryonic stem cell research assures the cell sampling without altering or destroying the embryo. Stem cells derive from blastocyst, and possess the capacity to become specialized cells in different tissues and organs, being involved in their regeneration in case of diabetes, chronic heart diseases, and cancers.

In Europe, the embryonic stem cell research is associated with the possibility to deliver in spite of multiple diseases, and in the absence of a well-defined therapy, but the rules on their use are different between the European countries. UK Stem Cell Bank, the first stem cell bank in the world, opened in 2004, and ensures the research related to biological medicines.

Whenever adequate animal models are available, the ethics provide that the embryo research should be preceded by animal research. The modern genetic engineering intervention through chimeric organisms was in fact an attempt to facilitate the experimental research. Inspired by the Greek mythology, these hybrids are artificially created by combining genetic material from different species. Partially human chimeric embryos are produced only for research purposes. If an experimental animal presents a great number of characteristics similar to humans, the experimental research becomes more promising than before. The possibility to obtain a source of cells and organs for transplantation is enlarged by these chimeric organisms and the study on human cellular interactions in living organisms can be used for new therapeutic approaches. In 2003, Shanghai Second Medical University obtained the first partially human chimeric embryos when gametes from human and rabbit joined to form a single embryo.

After a few days of development in laboratory environment, the stem cells were sampled and these embryos were destroyed. In 2004, Mayo researchers announced the discovery of the conditions in which pig cells and human cells fuse together in a hybrid that carries a swine virus similar to
HIV. Irv Weissman, the director of Stanford University's Institute of Cancer/Stem Cell Biology and Medicine of California, announced that he created a line of mice with brains that are about one percent human, the study being beneficial for the therapeutic investigation of Parkinson or Alzheimer disease.

Ethical concerns promote the question of the real utility of such experiments, pointing out the danger of manipulating the chimeras with the risk of unknowable results. The exceeding of the moral and ethical limits in the experimental work, especially with partially human chimeric embryos, can turn into dangerous procedures, for example in case of in vitro fertilization. In order to prevent potentially abuses, Canada takes advantage of a proper legislation regarding in vitro fertilization, with a clear specification of the fact that no transfer of non-human genetic material in a human embryo and vice versa is allowed. On the other hand, the scientific research has to be thoroughly coordinated to exclude barriers, because the moral, biological reasons may easily hinder the discovery of solutions that allow new applications in medicine.

Chimeras raise troubling questions about the animal rights, the brutal intervention on ecosystems or natural selection. When the research is not possible on adequate experimental animal model, the pre-implantation embryo is more suitable. At the end of their conservation stage, embryos can be used in research, as long as the gametes providers are informed about this option.

An essential ethical dilemma appears when embryos are involved in destructive research or thrown up: the death or the divorce of the parents for whom they were conceived. The standard cryoconservation of embryos is not regarded as ethical, because of the high risk for their life. The dignity and the human integrity have to be protected for the next generations, by prohibiting the destructive embryos research or their critical handling. The human dignity gives value to the human genome. The genotype is unique for each individual.

The Universal Declaration on the Human Genome and Human Rights 1997 sustains the fact that the human genome represents the fundamental basis of all the members of the human family and, symbolically, it represents the heritage of the mankind [6].

From a philosophical-ethical perspective, the embryo status grounds on the principle that every human being has the right to life, without age, race, gender or disability discrimination or any other biological feature.

In the Declaration of the Rights of the Child (1959), the United Nations General Assembly sustains that every child deserves legal protection, before and after birth, [7] while the European Convention on the Human Rights, included today in the legislation of the United Kingdom as the Human Act 1998 Act, protects the right for life [8]. The same data is found in the ethical and medical declarations adopted by the World Medical Association, which preserved the stipulations of the Hippocratic Oath [9,10].

The church also states that the result of the human procreation, from the first moment existence and integrity, is regarded as a union between body and spirit, and must be
respected and treated as a person.

According to the Bible, the biological life is associated with cu “nephesh”-living being, but having nephesh means that the body possesses a ruach –soul, spirit. Every person has body and soul, from the first parents[11] . The biblical defense of the human embryo is based on the concept claiming that human beings belong to God [12] and it must not be killed [13], except for special circumstances. [14] The Sixth Commandment: "You shall not murder" refers to” deliberate murder of an innocent human being”. [15]

There are two major currents in Bioethics regarding the human embryo: the “laic” and the “personalist”, theological one. [16] The laic current contests the zygote’s quality of person, based on the following considerations: its slow development (theologians consider that the soul is instantly infused in the moment of fecundation), 50% from the zygotes and pre-embryos are aborted, the zygote and the pre-embryo are divisible (twins), there are no signs of nervous activation, it has no rational nature and possibility of expression.

The “personalist” current sustains that the zygote is already a person: it has a human genetic nature; it represents an organism which develops in a gradual and coordinated manner, the soul and the body being inseparable. All these developmental features define a person, without ontological and transitional limits between stages.

A Catholic minority sustains the thesis of Thomas d’Aquino, based on the delayed liveliness [17] One of the most important catholic theologians, Thomas d’Aquino, postulated that when the body presents a debut of nervous activity, there is a matter prepared to receive the spiritual soul.

A long debated issue remains the 14th day, when the embryo has the possibility to become a human person, because the nidation is over, the primitive line which will generate the nervous system is formed and the twin division stopped. [18] The neurologists consider that the life of a human being starts with the thalamic development, or when the EEG waves are detectable (and disappear in the moment of death).

For the Buddhists, the embryo represents the reincarnation of a new existence, starting with the fusion of two gametes. In the Coran, the human embryo results from a drop of a mixture and is inspired after 42 nights.

The Hylemorphism (hyle “matter”, morphe “shape”) was the central doctrine of Aristotle, who stated that a body consists of two principles: the shape and the matter, the soul being the form which creates a living body, and the body-the matter.

Those who consider that the life of the human embryo starts later take into consideration the fact that the embryo is completely formed only after the specific structures appeared. The 14th day landmark, when the development is far enough, is quite arbitrary, because no single system, not even the nervous one, ensures the formation of the human being.

The Ethical Committee of the American Society for Reproductive Medicine offered an open position to support the embryo research but preserves the ethical limits for clinical and laboratory research which involves human embryos: the research has to be done only with the donor’s approval,
only by qualified persons, and in compliance with a research protocol with clear clinical and scientific benefits. [19,20, 21, 22, 23, 24] No conflicts of interest have been declared.

References
[2]. Bompiani A. Il dibattito sullo statuto ontologico
[6]. United Nations Educational, Scientific and Cultural Organization, Universal Declaration on the Human Genome and Human Rights 1997, art. 1
[7]. www.hri.org/docs/ECHR50.html
[8]. www.un.org/Overview/rights.html
[9]. www.cirp.org/library/ethics/geneva/
[10]. www.cirp.org/library/ethics/intlcode/
[13]. Gn 9:5,6; Ex 20:13; Dt 5:17
[14]. Traditionally the three biblical exceptions are in cases of capital punishment, self-defence and Just War, 25- Ex 21:12-14; Lv 24:17-21;
[15]. Nu 35:16-31; Dt 19:4-13