The Political, Legal and Ethical Consequences of Technological Progress in Medicine

Abstract: This paper explores the political, legal and ethical consequences of technological progress in medicine. In order to demonstrate the essence of the problem, the author focuses on a single aspect of this medical and technical revolution, namely the imminent possibility of brain transplantation. It should be mentioned at the outset that other aspects of medical progress such as assisted procreation, cloning, genetic engineering and the application of some psychotropic drugs are just as controversial from a deontological or legal viewpoint. As well as affect individual lives, the medical revolution may have political results, including the possibility of intentional change in human nature.

A huge progress in the development of medical technologies is currently being observed. It is undoubtedly beneficial to the entire humanity, but it may also cause some dangers. Every invention can be used for both good and bad purposes. Thanks to new medical technologies, life saving has become even more possible. One is able to prolong life, eliminate so far incurable diseases and increase the comfort of living. Still, situations in which these revolutionary technologies become a threat are not beyond imagination. They may also negatively affect the future of individuals and entire social groups. One of the potential threats is the use of medical achievements in political strategies. History shows that such cases are not at all seldom. The practices of eugenics from the beginning of XX century are the case in point here. They used to trigger a lot of enthusiasm in the scientific and political world. Today, they are explicitly forbidden and condemned. Such ethical doubts in the field of medicine have appeared in many other areas. They are influenced by a certain world view, especially when faced with a dilemma of medicine fulfilling every wish of a patient or being a field of study following precise rules of deontology. Issues concerning euthanasia, abortion or - such a minor matter of Caesarean section on demand are meant here.

It appears that in such cases it is necessary to create legal regulations on the national, European and international level. It is by no means not enough to leave the issues of freedom in the
utilization of medical technologies only to the so called self-regulation (code of deontology of certain professional groups e.g. doctors, scientists). It is obviously a form of limitation imposed on the freedom of scientific research, but such actions are taken to protect human rights and dignity of human beings. Article 2 of the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine (otherwise known as the Convention on Human Rights and Biomedicine or Bioethics Convention), signed in Oviedo on 4 August 1997, expresses the primacy of human being. According to this principle, the interest and good of a human being should outweigh the sole interest of a society or science. Observing the above guidelines, the application and the development of some medical technologies, like human cloning, have been forbidden.

**Human cloning prohibition**

The aim of the works on the development of human cloning technologies were the following: possibility to obtain natural, unrejectable implants for transplants and procreation opportunities of being able to re-born a new, genetically healthy foetus that has been severely injured during a difficult labour. Still, such medical technologies may lead to a number of threats: mass "production" of clones with specific genetic makeup in order to develop a race of supermen or individuals joining military troops, production of "substitute bodies", or creating brainless clones as a potential source of transplant organs. The prohibition on reproductive human cloning has been clearly stated in the Charter of Fundamental Rights of the European Union (article 3, item 2). In Poland, the prohibition is included in the legal regulations and in the Code of Ethics for Medical Doctors.

- **Genetic Engineering**

The progress of medicine in the area of genetic engineering is highly admirable. It is easy to imagine the dangerous consequences resulting from the usage of human genotype knowledge. Thus, article 11 of the European Bioethics Convention introduces the absolute prohibition of any
discrimination against genetic heritage. This act also establishes a limitation saying that tests foreseeing genetic diseases, tests that can be used to identify the carrier of a gene responsible for a disease, or tests that may detect genetic predisposition or susceptibility to becoming ill, shall only be conducted for health purposes or for scientific research connected with health purposes (article 12). Any intervention aiming at the introduction of changes to a human genotype may only be done for preventive, therapeutic, diagnostic purposes on condition that triggering genetic changes in the offspring is not its goal. (article 13).

- Assisted Reproductive Techniques

Yet another area raises the questions of ethics. It is the area where a great medical progress is being witnessed - assisted reproductive techniques. The benefits stemming from these medical procedures are undeniable. In this way, the wish of many couples who want to have children may come true. On the other hand, they bring some ethical and legal doubts. One of the consequences that the possibilities of new medicine carry is the break of the Roman principle mater seper certa est. As a result, the question of who is the mother of a child arises. Is it the genetic material donor or the woman who has given birth to the child, the surrogate? A principle that the mother of a child is the women who has given birth to the child has recently been accepted in Poland. Other issues constitute the prolongation of the reproductive age. Surely, in many cases, due lifestyle changes, its benefits are undeniable. Nonetheless, some uncertainty appears when a child is born by a 60-70 year old woman. Even though it is technologically highly possible, the questions of social and psychological costs of such a achievement are raised. Yet another consequence of progress in this area is the possibility to intervene in foetus genotype. Clearly, many serious genetic disease can be eliminated in this way. Do imagine, though, a situation in which one tampers with the levels of child's intelligence, its appearance or the choice of sex. For instance, it is commonly known that orally and aurally challenged parents expected from the doctors that their child will also suffer from the same disability as them since only it this way it would be able to understand their health problems. Article 14 of the Bioethics Convention introduces prohibition on the usage of assisted
reproductive techniques with the purpose of sex choice of a newborn, except the situation in which such choice prevents a serious genetic disease dependent on child's sex. Nowadays, in Poland, the issue that raised a lot of social interest and doubts is the *in vitro* procedure, with special emphasis placed on the treatment of frozen embryos. Works on the new act in this area are at the moment underway in Poland. It must be remembered though that article 18 of the Bioethics Convention reads that if a law in a given country allows the conduct of tests on *in vitro* embryos, it should provide adequate protection of those embryos, but the creation of human embryos for scientific purposes is clearly prohibited.

- **Progress in the area of psychoactive medicines**

The development of medicine in the area of psychoactive medicines which help to fight many dangerous mental diseases is very impressive. For instance, Prozac has not only been successful in medicine, but has also become almost a lifestyle. F. Fukuyama in the book entitled "The End of a Man" asked the question if it is possible to use this type of medicine to facilitate the well-being of entire social groups. In this context, one can imagine a situation in which during an election campaign a motto "Prozac for everyone" appears.

- **Transplant**

A great advancement in medical technologies is also observed on the level of transplants. These issues have also been legally regulated in the European Bioethics Convention and some basic principles have been introduced. First of all, procurement of organs or tissues from a living donor for transplant purposes can only be done for a therapeutic benefit of the receipt, and only on condition that procurement of such an organ or tissue from a deceased person is impossible and there is no alternative therapeutic method of similar effectiveness. Second of all, it is absolutely necessary to obtain a clear consent of a donor that does not raise any doubts. (article 19). Third of all, a principle concerning the protection of persons unable to express their consent to organ procurement has been established (children, the legally incapacitated, the unconscious). However,
some less restrictive solutions have been applied to family related donors e.g siblings. Normally, a donor consent is deemed valid when s/he is 16 years of age, but, in Poland, a 13-year-old may express his/her consent. What is more, the general principle reads that a human body and its organs cannot itself constitute a source of profit. The sale of human organs is prohibited by law. Still, when searching through the Internet it seems that everything is for sale. One of the doctors calculated that "selling a human for parts" may bring the income of 200 000 dollars. According to the Bioethics Convention, if, during a medical procedure a part of a human body has been procured, it may be stored and used for the purpose other than the one for which it has been procured on condition that adequate persons have been properly informed about that and their consents has been obtained.

- **Brain transplant or brain "package" transplant?**

One of human organs that could be transplanted is the brain. Today, due to medical technology it is still impossible. However, one of remarkable Polish transplant surgeon stated that in 20-30 years time doctors will learn how to conduct such a procedure. Should we agree to such transplantations be allowed? It is hard to imagine social, political, ethical and legal consequences of this type of medical procedure[1]. One of the fundamental issues here is the possibility of conscious change of human nature and the question of human and legal subjectivity[2].

The term itself - "brain transplant" - raises many doubts. Do we really deal with brain transplant or rather a transplant of the entire "brain package"?[3]. Discussion on the possibility of brain transplant has been carried for a long time. First, the possibility of head transplant has been considered. This issue was theoretically analysed by the French philosopher, Julian Jean Cesar Legallois, in 1812. First experiments were conducted on animals. In 1857, dr Charles Eduard Brown – Sequard made an attempt at transplanting dog's head. He successfully managed to sustain the function and movements of the eyeball for a couple of minutes by administering oxidised blood. Later, dr Jean Baptiste Vincent Laborde managed to isolate human brain and weigh it. Other experiments tried to sustain the blood supply to the brain procured from persons sentenced to death. However, these experiments failed[4]. More information on brain transplant experiments comes
from the then Soviet Union, when in 1920s, Sergei Brukhonenko transplanted dog's head by maintaining some of the body functions for three hours[5]. Interestingly, according to some press news, George Bernard Shaw was himself very much interested in the procedure. He was even willing to undergo one as this would prevent him from fatal disease of the "brain package", and he would be able to continue writing[6]. In 1959, similar attempts were taken in China. An experiment conducted in the United States, at *Case Western Reserve University School of Medicine* in Cleveland, Ohio has ended with a significant success. Robert J. White, a neurosurgeon, tried to transplant a monkey's head to another monkey. The result was very surprising, because the animal, after the transplant, kept the sense of smell, taste, hearing and sight.

In these trials of brain transplant, the basic medical problems, hard to overcome, are the maintenance of blood circulation (to be more precise - the lack of time once the blood circulation stops) and the need to cut the spinal cord, which according to the present medical knowledge is irreversible[7]. However, there have been some reports on spinal cord discontinuation coming from *Winstar Institute of the University of Pennsylvania* and claiming that such experiment done on mice has been successful. Another issue that may lead to legal, social and ethical problems is the transplantation of brain parts. In 1982, dr Dorothy T. Krieger, director of Endocrinology Clinic in *Mount Sinai Medical Centre in New York*, managed to successfully transplant a part of mouse's brain. When it comes to experiments on people, one may refer here to the experiment from 30 March 1982 done in Stockholm, in *Karolinska Hospitalet*. The experiment involved the grafting of tissue to the brain of a 55-year-old man suffering from Parkinson's disease. This experiment is nowadays considered as one of the methods of treating this disease[8].

Nevertheless, from the very beginning of similar trials, ethical doubts have always accompanied such experiments[9]. It is worth to mention that such dilemmas appeared when the first face transplant attempts have been made. Even here, the concern about donor's personality change appeared and this procedure only involves transplantation of skin, subcutaneous tissues and nose cartilages. Getting ready to a face transplant, all possible ethical doubts such as the choice
(selection) of the right candidate, possible negative medical and psychological consequences have been taken into consideration[10].

As it has been said before, the first issue to be settled is the matter of terminology. Namely, when talking about a brain transplant do we mean the transplant of this particular organ or do we mean the transplant of a body to a brain? It is quite significant as it resolves the basic dilemma connected with the issues discussed herein - can we talk here about the continuity of human life and does the identity of an individual is maintained, and if yes, will it be connected with the body or brain?

This problem has not been separately regulated by the international law. Thus, all the abovementioned principles are applied. When it comes to Polish regulations, basing on the definitions of terms such as "organ" and "procurement" to be found in the binding Act on the procurement, storage and transplant of cells, tissues and organs, dated 1 July 2005[11], there is no doubt about the brain being treated as an organ and brain transplant as a procurement. Looking at this problem form a different perspective, one might say that "brain package" should be treated as a collection of organs. The Act introduces the ban on receiving any kind of payment or financial benefits in exchange for the procurement of a cell, tissue or an organ from a donor, except for the costs of procurement, storage, processing, sterilization, distribution and transplant. Another Act's principle reads that cells, tissues and organs may be procured from a human corpse for diagnostic, treatment, scientific and didactic purposes on condition that a deceased person has not opposed such procedures. It is worth mentioning that a living person may also become a donor if s/he fulfils a number of requirements defined in article 12 of the Act. These would be, for instance, ascertainment that organ procurement has been proceeded by medical tests proving that the risk of the procedure does not exceed the foreseen permissible limits for such procedures and shall not disable the donor significantly. Obviously, this does not apply to brain transplant.

The initial content of the Act emphasised the issue described in article 9, which is of certain significance to the subject matter of this paper. It read as follows "the procurement of cells,
tissues and organs for transplant purposes is acceptable once the brain activity is permanently and irreversibly stopped (brain death) and declared as such. As it stems from the above, the criterion of the brain death was decisive when declaring a person's death. In such situation, from the legal point of view, brain transplant would be impossible. It would be only possible in the case of irreversible brain death. However, on the basis of the amendment dated 17.07.2009, article 9a was added. In conformity with this article, the procurement of cells, tissues and organs for transplant is acceptable after declaring an irreversible stop of blood circulation. Here, the legal evaluation of the possibility to conduct such procedure will be different.

It must be stated that in the light of the present legal regulations in Poland the term "brain transplant" is incorrect. If the legal subjectivity of a human is connected with the brain, one should rather talk about a transplant of a "brain package". Even if the today's' medical barrier was crossed, the social and legal consequences of a transplant would be difficult to predict. Basically on every level. What is meant here is mainly the establishment of the "place" of the legal subjectivity of a human. If such futurological visions were realized, certainly some questions and doubts would appear. For instance, who should be treated as a natural person and, at the same time, a legal subject. Is legal subjectivity connected with the brain or body? As it has been mentioned before, this dilemma can only be solved by accepting the fact that the essence of human being is associated with the brain. Yet, it does not have to be this way. Proof to that constitute reports of transplant surgeons who inform about personality changes among patients with heart transplants. It is not convincing to say that the subjectivity of an individual is connected with only one organ. And deciding about it may bear great significance in almost every legal aspect, e.g. inheritance or property law. Equally valid doubts occur on the level of family law, especially parental rights, husband-wife, parent-child relations. Uncertainty is also visible in the area of criminal law. Who or what shall be responsible for a crime: brain or body? It also applies to serving a sentence, e.g. imprisonment. Moreover,
identification techniques of suspects may fail, too. Especially the analysis of fingerprints and DNA tests. Similar confusion will surely appear on the level of constitutional law (right to vote etc.) as well as administrative law and many others. Undoubtedly, in each of these situations, the principle of subjectivity of identity connected with the brain should be followed. The situation gets more complicated if there is only partial brain transplant. In such a case, the aforementioned findings become unreliable. Thus, it appears that such procedures should be clearly prohibited on the level of national, European, and international regulations. As presented above, ethical and legal norms do not allow all the available medical technologies to be fully utilized, e.g. prohibition on human cloning. Here, the argument in favour of such radical solution would be a far too radical intervention in human personality. On the other hand, a different perspective would show that if one does not talk about a brain transplant, but rather sees it as a transplant of the remaining organs, then the ethical tone would be subdued. Today, without any axiological reservations, the procurement of a kidney, heart or lung is possible, then a transplant of a group of organs, a body, should not raise such doubts any more. It seems, though, that this perspective is rather distant. One does not need to worry about when and how a transplantological "end of a man" shall approach[12].


[10] M. Siemionow, Twarzą w twarz. Moja droga do pierwszego pełnego przeszczepu twarzy, Kraków 2010, s. 139-169


[12] F.Fukuyama, op. cit., passim