

Is the Use of Animal Organs for Transplants Morally Acceptable? -Debates Over the Use of Animals in Xenotransplantation-

HAYVAN ORGANLARININ TRANSPLANTASYONDA KULLANILMASI AHLAKİ YÖNDEN KABUL EDİLEBİLİR Mİ?

-XENOTRANSPLANTASYONDA HAYVANLARIN KULLANILMASI ÜZERİNE TARTIŞMALAR-

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Abstract

As a first step, the arguments for and against the use of animals for medical purposes in general were reviewed. These arguments are summarized briefly in the first part of the article. Even if people accept in principle the use of animals in medicine and medical research, their use in xenotransplantation may raise particular difficulties. There are three key issues in the debate over the use of animals in xenotransplantation. The first is whether as a matter of principle, it is considered to be morally acceptable to use animals as organ or tissue source; the second is the ethical acceptability of the use of primates to supply transplant material; the third is the ethical issues raised by the use of genetically modified animals to provide organs for xenotransplantation. If it is agreed to be acceptable in principle, there are then questions to address regarding the welfare of animals within any xenotransplantation programme. Finally, the author discusses these ethical issues in Chinese cultural context.

Key Words: The use of animals, xenotransplantation, moral argument

Özet

İlk olarak, tıbbi amaçlar için hayvanların kullanılması ve kullanılmaması hakkında tartışmalar genel olarak incelenmiştir. Bu tartışmalar, makalenin ilk bölümünde kısaca özetlenmektedir. İnsanlar, hayvanların tıpta ve tıbbi araştırmalarda kullanımını prensipte kabul etseler bile, hayvanların xenotransplantasyonda kullanılmaları, belirli zorluklara neden olabilir. Hayvanların xenotransplantasyonda kullanılmaları üzerine tartışmalarda üç anahtar konu vardır. Birincisi, bir prensip olarak, hayvanların organ veya doku kaynağı olarak kullanılmalarının ahlaki olarak uygunluğu; ikincisi, transplant materyali sağlamak için primatların kullanımının etik açıdan kabul edilebilirliği; üçüncüsü, xenotransplantasyon için organ sağlamada genetik olarak değiştirilmiş hayvanların kullanımında artan etik sorunlardır. Prensip olarak uygun olduğu kabul edilse de, herhangi bir xenotransplantasyon programında hayvanların rahatını dikkate alma konusu hakkında sorular ortaya çıkar. Son olarak, yazar, bu etik konuları Çin kültürü bağlamında tartışmaktadır.

Anahtar Kelimeler: Hayvanların kullanımı, xenotransplantasyon, ahlaki tartışma

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The use made of animals in biomedical research is a significant issue, but it has been no more than one aspect of the general philosophical question about the status of animals. Do animals have rights? Do animals have a right

to be free? Do animals have a right to coexist with humans? How these questions are answered will do much to shape the character both of medicine research and of our society. However, the great weight of philosophical tradition in the West has not assigned much significance to these questions historically, the verdict has been against animals. Animals have been supposed to lack rationality, language, autonomy of will, or, even, consciousness itself. Lacking of these morally decisive attributes, animals have, generally, been excluded from moral consideration. Philosophical discussion about the moral status of animals has emerged only quite recently along with a parallel rise

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to prominence of social movements that campaign against what they see as abusive treatment of animals in our societies---an animal rights movement and an animal welfare movement.

Modern medicine is an experimental science built upon, and demanding, research with both animals and humans. Hence, a decision, either implicit or explicit, on the moral standing of animals is unavoidable for all involved in the medical enterprise. "Arguments about the moral standing of animals and the propriety of experimenting with animals are typically based on claims about rights or utility. Animal rights supporters assert that differences between humans and animals are not significant enough to exclude animals from the moral community, particularly if we allow that human infants and severely retarded human beings have rights. Utilitarians concerned with the treatment of animals claim that animals experience pain and pleasure, and so have interests, and therefore, must be accorded moral standing."¹

"An animal's right to life may be regarded as either (a) equivalent to or (b) weaker than that of a person. We can call these two views the 'strong and weak positions on animal rights'."¹

The strong position implies that animals possess the right to respectful treatment, and this entails that they not be treated only as a means to some other end. They end in themselves, and this intrinsic worth makes it wrong to use them as subject in research. A variety of ethical problems emerge from the strong position on animal rights. Foremost is the difficulty in adjudicating competing rights. Beside that, this position implies that there can be a natural self-sustaining community all of whose members have important rights but none of whom have any duties, because it seems unreasonable to regard animals as having duties. In deed, the animal world cannot exist without the checks and balances of predation.

The weak position on animal rights would maintain that even for humans the right to life is not absolute, that rights frequently conflict, and that in circumstances where human rights conflict with animal rights, a specific judgment will be necessary. Thus, an animal's right creates a duty, which to some degree restricts our behavior. Since a person's life is more important than that of any other animal, the use of animals for medical purpose is morally acceptable. This position can be compressed to a claim that animals have some rights, without duties, and may justifiably be sacrificed for a variety of human purposes.

The issue of rights remains controversial and even more so in the case of animal rights. As demonstrated above, the strong position is untenable and the weak posi-

tion fails to create powerful duties for humans. The absence of any correlative notion of animal duty within either the strong or weak position on animal rights results in moral claims with little persuasive power. In addition, "rights talk" fails to capture what is morally significant about our treatment of animals. It is not necessary to endorse the notion of animal rights in order to conclude that animals should be granted protection against certain procedures.

"A utilitarian calculation directs our action, and informs us of our duty. As with rights-based arguments reviewed above, the utilitarian case for considerate treatment of animals also may take one of two forms: (a) humans have duties to animals that can be powerful enough, at times, to override important duties to other humans; and (b) human duties to animals rarely, if ever, take precedence over duties to other humans."¹

According to the former view, the correctness of an action is judged by the extent to which it maximizes the balance of pleasure over pain, and, further, that pleasure and pain are simple, straightforward concepts which are difficult to assess precisely. If we recognize that the interests of humans are deserving of equal consideration, then so too are the interests of nonhuman animals. If animal pleasure and pain are equated with human pleasure and pain, then our duties to animals do not disappear when we merely cease to exploit them for our benefit. At this point we confront difficulties analogous to those encountered with the strong position on animal rights. A difficulty with this view is that a utilitarian calculation requires some underlying assumption about human nature and what is pleasurable and painful for humans. We can find it is untenable.

The latter view would maintain that because animals suffer pain, they are entitled to some consideration. This approach starts from the position that the interests of animals, particularly avoiding suffering, should be taken into account when judging whether it is acceptable to use them for medical purpose, but no actual duty to interfere. So this position imposes little restraint on human conduct.

The ethical issues raised by the use of animals are very complicated and filled with controversies, and, in the first part, the arguments which have conflicted with each other all the time are briefly reviewed. I try to show here that extreme anti-anthropocentrism is untenable (as Regan's deontological view of animal rights), but it doesn't mean that we should not be kind to animals as a virtue of human society. Philosophers are concerned with abstraction and focus on theoretical issues pertaining to animal's moral status (as Singer, Cohen, and Hettinger do). But to

be effective, moral theory has to become more sensitive to the many practical contexts in which more and more issues arise. Most people, whether utilitarians or not, argue that at least some forms of animal experimentation can be justified by the benefits produced. Human beings already use animals for many purposes including food, clothing, companionship, and labor. Indeed, every virtual accomplishment of medicine and surgery was built upon animal experimentation. Many would endorse the view that animals have interests, particularly in the avoidance of suffering, that should be respected, but that in certain limited circumstances those interests may be outweighed by the interests of human beings provided that everything possible is done to minimize distress to the animals. This is a utilitarian argument which holds that ethically acceptable actions are those which increase the benefit, or reduce the harm, to as many individuals as possible. We are all obliged to make value judgments about what activities are permissible even though they are harmful to some animal. When judging the acceptability of the use of animals for medical purposes, a decision must be made about whether the pain and suffering caused to the animals is justified by the potential benefit to the human being. Biomedical research using animal subjects is justified as an undesirable and unavoidable necessity.² "More rigorous cost-benefit scrutiny of animal research protocols is needed because (1) the best argument favoring animal research is based on an appeal to its benefits and (2) there are compelling reasons for taking seriously the various costs of such research."³

However, even from a broadly utilitarian perspective, accepting the general principle that the results justify the practice does not mean that every experiment with animals is warranted. If some use is accepted, it is then necessary to determine what is, or is not, considered acceptable. Even if people accept in principle the use of animals in medicine and medical research, their use in xenotransplantation may raise particular difficulties.

The first is whether as a matter of principle, it is considered to be morally acceptable to use animals as organ or tissue source of human beings. At present, the tenable justification for the use of animals in medical research is the balance of animal suffering and human benefit. In some cases, such as the use of animals for testing cosmetic products used for beauty treatment, there is widespread agreement that the benefit to human beings is trivial and does not warrant the suffering involved. But in other cases, weighing the pain and suffering to animals against the benefit to human beings is not easy. People will express a variety of views on this question. Animals are already widely used within human society for a variety of purposes. Different people will give different weight to the

harms and the benefits and so will come to differing conclusions about the acceptability of using animals for a particular purpose. But most people accept the principle that in some cases, the saving of human life may justify a certain amount of animal suffering.

The remarkable half-century transition of organ transplantation from experimental intervention to standard clinical practice has resulted in a growing disparity between the number of persons who could potentially benefit from allotransplants and the availability of transplantable human organs. More and more patients have to register on the waiting list for a long time and never benefit from the success of transplantation. If we can use animal organ or tissues, then transplantation could finally be extended to all dying patients who need it. In this case, we have no better way except sacrificing animal interests to some extent. Most people will endorse that using animals as organ or tissue source is morally acceptable, this spectrum of views can be seen in the attitude surveys conducted in different countries. But we can scarcely escape all the responsibilities for procedures that directly or indirectly cause the injury, death, and suffering of other animals in xenotransplantation research because the animals are not only experimental subjects but also organ or tissue donors of human beings. There are some issues need to be discussed further.

In earlier clinical trials using animal solid organs during the 1960s, 1970s and 1980s, all human recipients died shortly afterwards. There was no consideration about the balance of animal suffering and human benefit. Both animals and human subjects were nothing but the victims in experimental protocol for the development of technology at that time. Currently xenotransplantation research is still filled with so many uncertainties, and also raises public health issues. The transplantation of animal organs, tissues or cells raises the possibility that infectious organisms of animals may be transferred into the human population. The risk is not just to the recipient, the entire human population is put at risk. In addition, the mixing of genetic material from different species may generate new and unpredictable infectious agents. Excessive haste in moving to the clinic might create a disaster. In this condition, animal suffering and sacrifice can't warrant human benefit, even do more harm.

As for the cellular and tissue xenotransplantation carried out for pain relief, to produce insulin or to enhance brain function worldwide currently, most diseases involved in this research are not being severe enough, compared with potential risk. Furthermore, it is doubtful whether the life-quality of recipients is enhanced. The risks of lifelong immunosuppressive medication, and possible development of cancer, ironically mean that this treatment may possibly

shorten life. On the other hand, animal suffering and sacrifice is huge. For example, in an experiment of transplantation of new-born pig islets in diabetic patients, the findings suggested that 10 new-born pigs' islets for one patient were necessary.

At present, further basic studies are overwhelmingly needed to define the infectious risks associated with xenotransplantation into humans. We should keep the balance of animal suffering and human benefit in mind and take our duties to animals seriously. When animal suffering is severe but human benefit is obscure or uncertain, it is not morally acceptable to rush into immature clinical trials. The justification for such research will be the perceived lifesaving benefit of successful organ transplantation or cell therapy.

The second difficulty related to animal use in xenotransplantation is the ethical acceptability of the use of primates to supply transplant material. Because of the genetic closeness of higher primates to humankind, their organs and tissue are likely to offer a good chance of success for xenotransplantation. But the very reason that makes primates appear to be well suited for xenotransplantation, namely their evolutionary relatedness to human beings, also leads many people to think that it would be wrong to use them for this purpose.

The higher primates share capacities of intelligence and complex social interactions with human beings to some extent, especially the capacity of self-awareness to the highest degree, and there is good scientific evidence that this is the case. We believe that the primates suffer more consciously than other animals. If a chimpanzee is killed to provide organs for transplantation, in addition to his own pains and suffering, his mother will suffer grief at the loss of her offspring. The dilemma concerning the moral distinction between human beings and primates is extremely difficult to resolve because of the complexity of the disagreement of value, but the likeness between them in a biological sense is the fundamental moral judgment. According to this position, the primates' life can not be legitimately sacrificed. Currently, the use of primates is very strictly controlled with only very small numbers being used for research purposes. If they are to be used as a source of organs for xenotransplantation, we need to breed primates on a large scale, which is ethically unacceptable. As such, the ethical issues raised by the use of primates in xenotransplantation require exploring in some detail.

In the case of chimpanzees, which are an endangered species, strong moral concerns suggest that their uses for xenotransplantation should be forbidden. As for baboons, which are not endangered at present, it would be necessary to establish breeding colonies of disease-free baboons to

provide organs for xenotransplantation. However, establishing breeding colonies would require the capture of large numbers of wild animals, because of their slow rate of reproduction. Hence, although baboons are abundant at present, this might lead to an increased pressure on their numbers.

The safety of the use of primate organs and tissues for xenotransplantation must also be considered. Because of biological similarity between human beings and other primates, the risk of infectious organisms from a primate is greater than the risk of disease transmission from, say, pigs to human beings. We can not forget so many lessons in history, for example, deadly Ebola virus transmitted from primates to humans, HIV-1 probably also resulted from a simian to human virus jump.

Although some people hold that we should be more ready to include familiar, domestic animals (e.g. pet dogs or cats, pigs) within our moral community than unfamiliar primates, because the personhood of the animal is seen to derive from its involvement with humankind, in this context moral judgment should be on the basis of underlying genetic relatedness to human beings, rather than animals' relationship with us. As such, the adverse effects suffered by the pigs used to supply organs for xenotransplantation would not outweigh those suffered by the primates. It is also difficult to see how, in a society in which the breeding of pigs for food and clothing is accepted, their use for lifesaving medical procedures such as xenotransplantation could be unacceptable.

In brief, a conclusion can be drawn that the use of primates as a source of organs, cells or tissue for transplantation into humans is ethically unacceptable.

Thirdly, we should also concern with the ethical issues raised by the use of genetically modified animals to provide organs for xenotransplantation. If pigs are used for xenotransplantation, they are likely to have been genetically modified so the human immune response to the pig organs and tissue is reduced. There are two efforts which have been made to prevent the immune rejection by knocking out a certain gene in pig genome or producing transgenic pigs.

The essence of transgenesis is that a gene from one species is incorporated into another. The transgenic pigs bred for xenotransplantation contain a human gene which produces a complement regulating protein. It is around the transfer of genetic material that the ethical concerns turn. Some people see the production of transgenic animals as unnatural act that attempts to change the nature of animals and violates the species boundaries. There is a genuine concern about an interference with nature, which is often

characterized as 'playing God'. For others such "mutilation of the human body" would be sanctioned in the interests of saving life. A number of arguments suggest that it is extremely hard to be absolute about what is natural in our modern technological world. Species boundaries are not, in fact, inviolate but change as evolution occurs.

However, we can not neglect this point that today's scientific innovation is often tomorrow's commonly accepted treatment. Even though a transgenic pig would not be regarded as a human nor even a hybrid, this transfer between species still raises fundamental issues of who we are and where we are on evolutionary scale. Genetic diversity must be maintained. Pigs must remain pigs and human beings human beings. It is not a mere technological issue but ultimately an ethical issue that what limits should be set to the degree of genetic manipulation of animals. In relation to xenotransplantation, when the success of gene knock-out pigs moves closer, this technology which doesn't involve gene transfer between humans and pigs would be a better alternative to overcome organ or tissue rejection.

As demonstrated above, it is considered to be morally acceptable to use gene knock-out pigs as organ or tissue source for xenotransplantation, provided animal welfare is a high priority.

It is obvious that using animals as organ and tissue sources for xenotransplantation will undoubtedly have a great impact on their welfare. If the use of animals is agreed to be acceptable in principle, there are then questions to address regarding the welfare of animals within any xenotransplantation procedure. For example, the way animals are produced and subsequently bred; the husbandry and care of animals; the use of isolators and bio-containment systems; routine procedures carried out on animals (e.g. blood or tissue sampling); harvesting of tissues and organs, and euthanasia. In addition, gene knock-out animals might exhibit reduced natural protection against diseases or may exhibit subtle abnormalities which may not become apparent until the animals mature, such as reduced fecundity or altered mating behavior. There is a need for reducing unnecessary pains and suffering within any procedure.

Within different cultures there are a spectrum of opinions regarding what it is acceptable to do to animals including whether it is morally acceptable or not to use them as a source of organs or tissues for transplants. In the last section, I'd like to discuss these ethical issues in Chinese cultural context. As we know, Chinese culture is the combination of Confucianism, Buddhism and Taoism. There are diverse attitudes towards nature and differing

views about the relationship of humans to animals between them. Confucianism emphasizes that human nature (intrinsic worth) is the most valuable, compared with the sky, the earth, the plants, the animals, and such like. So it might regard any form of xenotransplantation as an unacceptable violation of the integrity of the human body and of species boundaries. Buddhism emphasizes simple, non-violent, gentle living. The well-known Five Precepts form the minimum code of ethics that every lay Buddhist and monk are expected to adhere to. Its first precept involves abstention from injury to life, and not depriving a living being of life. In its doctrine of karma and rebirth (similar to Hinduism), it recognizes that all animals and humans are spiritual entities to be treated with loving kindness. These views might entail a direct prohibition on the use of animals for medical purpose. Taoism places the harmony between human beings and nature in general in high esteem. It recognizes that human beings are not separate from nature but a small part of the natural world. Human beings should not seek to dominate nature but should instead stand in a relationship of care and concern for its continued flourishing. These views would be compatible with the limited use of animals in medical procedures where the benefit to human is clear, demonstrable and large.

It is important to consider all of these opinions, why they are held, and the criteria on which they are based, in determining policy on whether and how xenotransplantation should go ahead.

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