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An Inquiry into the Moral Question of Xeno-Transplantation

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Abstract

The practice of cross species transplantation has generated enormous controversies over time. Recently the lack of human organ donors has prompted an intense research effort throughout the medical community towards the possibility for animal organ transplants. Taking advantage of the overwhelming success of human to human transplantation, xeno-transplantation aims to reduce the demand-supply gap for organs. This paper examined whether the potentiality of saving thousands of lives should annihilate the ethical implications of xeno-transplantation and whether the possibility of ethical and health problems should overshadow the benefits of this new technology.

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An Inquiry into the Moral Question of Xeno-Transplantation

Introduction

Xeno-transplantation is an aspect of genetic engineering which has to do with a cross-specie transplant of organs, (e.g. pig to human). As a fairly new advance in medical sciences, it is controversial as an option to iso-grafting i.e. (transplant of organs between members of the same specie e.g. human to human). Isografting has witnessed tremendous challenges as a result of earlier successes recorded, in that the need for human organs far exceeds the availability of donor organs. An internet source purports that over 60,000 individuals in the United States were registered on transplant waiting list by the end of 1998. Each year, however, less than half of the people listed receive solid organ transplants and as a result, at least 10 people die each day while waiting for organs to become available (Biogroup, 2009)

Due to the enormity of this challenge, genetic engineers and biotechnology companies began research in xeno-transplantation to end this acute shortage of organs. Although; still in the experimental stages, xeno-transplantation is a potentially life-saving option for people with such ailments as severe heart disease, liver, lungs, kidney failure, and etc. The ultimate concern is that this practice has problems: some of which are the health risks and ethical dimensions to the technology. Thus, it is imperative to consider such ethical questions as, *who has the moral right to make a decision concerning an organ transplant? Should it be the recipient, the surgeon, next of kin or the spiritual guardian?* Consider for instance a probable consequence such as identity crisis which might result from a heart transplant between a baboon and a human? This is just one of a long list of consequences which might develop. And, will this technology (xeno-transplantation) have a serious impact on the treasured genetic barrier between humans and

animals? Issues like these raise questions and/or objections to the morality of xeno-transplantation. These pivotal issues form the crux of our concern in this paper.

A historical survey of xeno-transplantation

Organ transplantation has a relatively long history. As early as the 16th century Cosmos and Damian transplanted the ‘black’ leg of an Ethiopian onto the ‘white’ body of Justinian (Shelley, 2010). Organ transplantation between members of different species, which is called xeno-transplantation, has a fairly recent history. As a subject of experimentation, it began to receive serious attention from the scientific community in the late 1960s as a result of the giant strides made in human to human transplantation. Research indicates that between 1963 and 1993, 31 clinical procedures involving transplantation of solid organs from animal donors were said to have been performed in the United States and South Africa. It is worthy to note report implications that, in most of these transplants, the chief concern was not to obtain 100% success but to bridge the gap in maintaining life while awaiting a human donor organ. This is because xeno-transplantation still remains at an experimental level (Hung, N. and others, 2007)

The first experiments in transplanting a chimpanzee kidney were conducted in 1963 and 1964. One of the patients who received chimpanzee’s kidneys lived for nine (9) months. According to Hung and others, the research revealed that two of the publicized xeno-transplant operations in the last two decades involved Baby Fae, the infant who received a Baboon heart in 1984, and Jeff Getty, an AIDS patient who received a bone marrow transplant also from a Baboon in 1995. It concludes that while Baby Fae lived with her xeno-transplanted heart for twenty (20) days, Getty accepted the transplanted marrow almost immediately (Hung and others, 2007). By October 1998, Getty remained free of baboon transmitted virus and showed no sign of baboon bone marrow in his system (Biogroup, 2009). Some key issues such as increased risk of

non-compatibility, rejection, affordability, and disease infections still represent serious limitations against the success of xeno-transplantation.

Researchers are currently experimenting with pigs as sources of organs and tissues for transplantation. Domesticated animals such as pigs and cows are now being considered as potential tissue and organ sources before non-human primates such as monkeys, for a number of health, safety, and logistical reasons. Pigs are preferred because they mature very quickly and have organs of comparable sizes and functions to human organs in both infancy and adulthood. Additionally, they also can be bred to high health standards in microbiologically controlled environments. Monkeys on the other hand do not conform to these standards. Also, not only do human bodies reject non human primates; their genetic similarities could facilitate diseases spreading between the donor and the human recipient. Some researchers in xeno-transplantation do echo this point. John Atkinson who is researching on the effects of pig xeno-transplants, states;

A new virus is a theoretical possibility, but I can't imagine that with all our contact with pigs over thousands of years, that it would be a major problem (Hoke,1995). Atkinson appears to suggest that it is much safer to experiment with pigs than non-human primates' organs because of health related factors. Granted that xeno-transplantation is a potential lifesaving technology, we must acknowledge that it is still at an experimental stage and therefore potentially susceptible for unknown health risks. Beyond potential health risks, there, remain questions that challenge the morality of the application of this technology. Issues like these are the focal points in the next section of this paper.

Ethical concerns in xeno-transplantation

The lack of human organ donors has prompted an intense research effort into the possible alternative for supplying organs to thousands of people around the globe who could die without one. Granted that xeno-transplantation can help save lives, our intent is to examine the ethical dimension of the application of this technology on humans.

Firstly, we ask, who has the moral right to make a decision regarding an organ transplant? In line with the position of Center for bioethics (Center for bioethics, 2004), ethicists would agree that it is neither the surgeon, next of kin, nor anyone else but the recipient. However, it is easy to imagine a case in which a patient might be willing to undergo xeno-transplantation without wanting to assess the implications involved in this procedure; that is, when a patient feels that the “newest technology” is the only chance he or she has to survive. On this score, such a person becomes ethically unqualified to make such a decision. In the same manner, the Center for bioethics blue paper asks, does the surgeon on this ground have the moral right to deny a patient an operation that could save his life? (Center for bioethics, 2004). A problem is created here: for if the surgeon does have the right, should it be applied? If it is applied, then it may become difficult to see any patient who will qualify for xeno-transplanting. If on the other hand, for commercial purposes, the surgeon does not apply his moral right and grants such a patient his request, then, the application of the technology will not be morally right. This is because advocates of xeno-transplantation view the rejection of the donor organ, infection, and disease transmission as dangers that accompany any routine surgical operation of this kind (Hoke, 1995) and this cannot be ethically ignored.

If the only party who stands to lose is the patient, then the patient’s autonomous choice to sign on the dotted line has to be the predominant factor. We can foresee instances in which the

desire to recover from a deadly organ malfunction might overshadow the patient's full appraisal of the situation. The most optimistic outlook on this event is the fact that the patient will end up with an animal's organ in his body: even applying this scenario to ourselves in our imagination for a few seconds makes some of us shudder with fear. This certainly creates a problem of identity (Schicktanz, Wiesemann and Wohlke Eds. 2010). Individuals view their internal bodies as an extension of their identities and soon after the xeno-transplantation, some patients will realize the consequences of their actions on their self-concepts. Having an animal's organ in one's body has the potential to decrease one's self image despite intense counseling on the neutrality of this occurrence. We feel that this possibility, referred to as the "YUK FACTOR" (Nature, Biotechnology, 2008), is a strong ethical opposition to the domain of xeno-transplantation on the level of the individual involved.

Hence, personal identity obviously is a thought provoking subject for ethics; after all, responsibility to actions is granted to persons. John Locke holds that consciousness which always accompanies thinking is the very distinguishing factor between a person and other things and this alone consists of personal identity (Locke, 1993). Thomas Reid argues that the conviction which every man has of his identity is internal and as far back as his memory reaches, it needs no aid of philosophy to strengthen it, and no philosophy can weaken it, without first producing some degree of insanity (Reid, 1993). Daniel Dennett equally suggests that personal identity is tied to a man's internal form when he asks "where am I?" and replies, "wherever I think I am" (Dennett, 1993). These show that there is no way we can tamper with our vital internal organs without tampering with our identities.

Another serious ethical issue is social acceptance. We often see people discriminated against by their fellow human beings because they are leprous or have HIV/AIDS infection; how

much more to those who acquire animal organs? We doubt if there is any organization that will employ as a manager, a man who has a heart of a baboon. Suppose you found out that your fiancée has a heart of a chimpanzee, would you go ahead and marry her? How would you look at her, a human with the heart of a chimp or a chimp in a human shell? Again, if you found out that your psychologist's father received testes transplanted from a gorilla, would you go on receiving counseling from a man who may have been fathered by a gorilla? Social stigmas like these cannot be neglected entirely as Sunil and Sumana (Organ donation, the gift that saves lives, 2012) have shown in their research concerning reception of kidney transplants in India. Indeed, when applied to different cultural backgrounds some of these objections might form sensitive grounds for the rejection of this technology.

In Africa for instance, some of these objections such as social stigma would be sustained. Africans are very religious: in-fact, as John Mbiti puts it, notoriously religious (Mbiti, 1989,). This means that they show little resistance to their faith. So how would an African congregation for example react if they found out that their church minister has the heart of a pig? (Okeke, 2008). Indeed some results of these inquiries are better left unsaid.

In retrospect, let us consider a scenario where a President of a country is diagnosed with a terminal heart disease. From all indications, he is going to die unless; someone donates their heart to him. Be reminded that donating one's heart means dying while the recipient lives. Since no one would choose to die so that the President might live, the option left is xeno-transplantation. If the President consents to this, should there be an inquiry regarding his religion's stance on this practice? If the transplant turns out successful so that the President can now talk, walk and feel healthy once more to return to his job, would it be an easy transition? Suppose that country is Nigeria? How would Nigerians receive him? Who would they say is

their President, a man with the heart of a baboon, or a baboon with the body of a man? In social, political or ethical discourses, what type of news headline would it make around the globe that a human-baboon is the President of the greatest black nation in the world?

Furthermore, xeno-transplantation has deeper implications that extend beyond the individual realm to broader dimensions which may impact moral acceptability even more intensely. We ask, will xeno-transplantation have an impact on the genetic barrier between humans and animals? According to Kondrashov (1998) this is possible! We have arrived at a point in medicine in which a great majority of our antibiotics are becoming less and less effective in combating diseases because of the natural selection of mutant resistant strains of pathogens such as bacteria (Kondrashov,1998). In fact, one of the liveliest oppositions to xeno-transplantation is the relaxation of the barrier between human and animal diseases which will worsen our chances of containing the gigantic problem of antibiotic resistance (Kondrashov,1998). Kondrashov goes on to suggest that the scientific community is still recovering from the recent elucidation of the “mad cow disease” which turned out to have mutated into a form capable of infecting human beings through consumption (Kondrashov,1998)..

Also, the wide spread objection to xeno-transplantation is issued from utilitarian ethical theory which was embraced by the Nuttfield Council on Bioethics. They reemphasized that it is not ethical for an individual to affect negatively the whole human population as a result of a singular decision: “the risk associated with the possible transmission of infectious disease have been adequately dealt with. It would be unethical, therefore, to use this technology involving human beings (Nuttfield Council on Bioethics, 1996). This statement implies that the whole lot

of humanity could be debased if animal organs are used to replace human organs, especially the sensitive ones, which can make humans look at our own specie as being more or less animalistic. Again, controversy stems from the ethico-economic perspective. The cost of obtaining a xeno-graft is high. Because our global economic system is built on limited resources; that, coupled with un-limited want, creates an ethical dilemma related to the distribution of resources. Who gets what first? The man who can afford it or the man who has been on the waiting list? Even if we attempt to disregard the economic burden of xeno-transplantation as well as the potential for transmission of new diseases, the human society has to come to terms with what it means to be human in the long run. Some have argued that our mental capabilities including foresight, feeling, thinking, memory and so on, set us apart from every other living beings. In that case, encouraging xenografting becomes a moral decision since that will force us to look beyond the physical into individual inner beauty and composition before we assert them humans.

Also, Olen and Barry suggest that:

the morality of xenotransplantation would still be questionable if we consider the thesis of the proponents of “Animal Rights”. Their thesis is that since human animals morally ought to maximize happiness and minimize suffering, and since non human animals are just as capable, then we ought to reconsider our treatment of animals for our own pleasure. (Olen and Barry,1999).

‘Animal Rights’ proponents have been criticized from divers perspectives, especially from the Judeo-Christian tradition which holds that God who created all things had given man dominion over all other creatures on earth. The implication of this is that it is morally acceptable to transplant the heart of a baboon, to a human animal if this could make the person survive a certain sickness and live ‘a normal’ life.

Here the question of utility looms immensely. Philosophers and proponents of ‘Animal Rights’ like Peter Singer and Tom Regan argued that “just as respect for persons requires that we not treat other humans in certain ways, regardless of utility, so should respect for at least some non human animals require that we not treat them in certain ways regardless of utility (Olen and Barry, 1999)”. Regan in particular emphasizes that conscious adult mammals that are aware of their environment, have desires, feelings, emotions and even memories, beliefs, preferences, goals and a sense of their own identity and future (characteristics also exhibited by humans), should not be used merely as a means to our own ends! The latent or even silent question this raises is, what is the moral justification in killing an animal through organ transplantation in order that certain human animal might live? What if the human animal life being saved becomes worthless? Or what if both the non human victim and the human victim fail to survive the transplantation? This implication shows the double-headed ethical pitfall shadowing the application of xenotransplantation in our opinion.

Finally, there are people who insist that xeno-transplantation remains a viable option. Their reasons include; that it can save thousands of lives and it can make organs available and affordable. Those who appeal to the dictates of ‘Situation Ethics’ or contextualism, or what we could simply refer to as circumstantialism, like Joseph Fletcher (1963) would say, that there is nothing wrong in xeno-transplantation as long as the circumstances or situation demands such, and of course would lead to the (person\victim) living a normal life thereafter. In this wise, it would be taken, as Joseph Fletcher opines (1963) that, “circumstances alter rules and principles”. Another strong opposition to this practice maintains it is unnatural and as a result will disrupt the human geneo logical order, in which we disagree with this position. A recent article in the *Journal of Medical Ethics* states that “on one account everything that humans do is by definition

unnatural, because it constitutes an interference with the non-human natural order. On another account, nothing that the humans do is unnatural, since humans are themselves a part of nature” (Hughes, 1998). We reject this unnaturalness argument because any alteration made to anyone is somatic (Massey, 2001). This means it will not be passed on to any offspring. Therefore, our opinion is that dismissing the moral acceptability of xeno-transplantation on mere possibilities would be hasty because of its detrimental effect on the science of medicine in its search for the alleviation of suffering of patients. We think that if we view the substantiation of this event from a more proportionally balanced approach, we will come to a more optimistic view.

Conclusion

This paper exposes all possible sides by expanding on the strong points made by both proponents and opponents of xeno-transplantation. We have included our opinion on some aspects of this debate which concerns us most in coming up with the “least worst” strategy (Rhoden, 1986), i.e. a preferred way of admitting what must be endured or accepted. We conclude this exposition by drawing attention to what Pascal Ferzli calls a “gold rush” to xeno-transplantation (Fertzli, 2006). Regardless of the ethical considerations of this practice, many scientists will go ahead pursuing this line of research chiefly for fame. It is a bitter truth that as long as there is a discrepancy in people’s conception of ethics, the opposition to the continuation of research in this area will not be sustained, and Pandora’s Box will surely be opened. Wherever and whenever it is done, let it be done with caution!

Please note that the opinions expressed by the authors represent those of the authors and do not reflect the opinions of the Online Journal of Health Ethics’ editorial staff, editors or reviewers.

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