
BIOETHICS¹ AND ETHICS IN CANCER RESEARCH

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INTRODUCTION

The following should be considered a personal viewpoint of ethical aspects taken from over fifty years of cancer research experience by the writer (M.D./Biochemist) and includes some commonly known issues as well as, perhaps, a few new ideas.

GENERAL CONCEPTS

One should generalize moral and ethical ideas since morality/ethics are fuzzy sets that deal as biogradients in the evolution of the dawn of mind. Thus, no absolutes exist for the ideas of right and wrong. Morals and ethical behavior are involved with situations that are a function of time, e.g., ethics of that era or considerations of the situation of that moment, etc.

Choices of moral behavior cannot be made in absolute terms, because they cannot be put down as principles or rules of action. The reason for this is that each individual according to his/her own philosophy/ theology must elect a certain course of action, e.g., in the discussion here—to be treated and live or not to be treated and die (in the most simplistic case).

However, in this writing commonly used attitudes towards ethics will be used in attempting to discuss certain issues.

BIOETHICS

As a generalized principle, there may be rules in social settings of other hominids, e.g., monkey interactions with dominate males and the responsibility of rearing the young and adopting orphan baby monkeys, etc. that leads to ethical behavior². Therefore, ethical behavior can be considered to be a biogradient—a function of social behavior among all biological organisms. An extension of this concept is to say that it is difficult to speak in terms of human ethics when the problem includes at least one other

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specie. In fact, the human attitude is to limit ethical problems to humans and thus be blinded to holistic aspects.

The evolution of hominids has resulted in giving the human species the power to selectively use other species, e.g., mice/rats in attempting to ascertain the nature and treatment of cancer. This usage becomes, in itself, a moral issue. Do we have the right to subject other species to these experiments no matter how humanely it is carried out? In the realm of cancer research, scientists are confronted with the task of squeezing out small morsels of truth from "Mother Nature" who tenaciously holds on to these truths.

There are attempts to reduce the use of whole organisms by using transplanted human tumors in nude mice. Nude mice have a mutation which eliminates T-cells which gives a partial immune deficiency and allows heterotransplants to be made³. One can use tissue culture experiments to do preliminary experiments, thus alleviating certain painful procedures.

There are also attempts to reverse dysdifferentiated (cancer) cells back to normal cells by inducing redifferentiation, e.g., butyric acid induces erythroid differentiation of leukemic cells⁴. Such attempts to eliminate cancer from humans are being sought and can eventually be used for treatment of cancer for all kinds of vertebrates.

Humans have evolved introspective capacities of the mind and thereby have acquired the responsibility of 'correct' attitudes towards all life. The more organisms become introspective, evolutionarily speaking, the more there are moral responsibilities and ethical issues that arise.

With the powers of the human mind and its ability to select, the remainder of the biological world is at the mercy of the human mind—thus, the importance of a humanitarian based ethic and a humane treatment of all life. What should be taught, in practical terms, is a respect for life. For example, the realization that the pattern or array of electron transport system components in a mitochondrial membrane with all of its intricacies, which is a thing of biological beauty, can be destroyed if the organism receives a piece of lead in a strategic place. Education should be broadly taught that instills such concepts. This might stop a wide spectrum of destructive action from Oakland, California gang activities to African political genocide warfare. (It is understood that in reality a dichotomy exists for this idea because of the juxtaposition in these two examples of the lack of education and knowledge component for mitochondrial membranes and the economic requirements that would allow for such an education; nevertheless, the point is made.)

One can argue from a pure biological standpoint, that no specific species should ethically be 'better' than another. Therefore, there is no absolute reason, except a theological one, to select, say, human disease to

be cured by mouse experiments or *visa versa*. Although, one could say that the first law of biology—the survival of the individual (extended to survival of the species)—gives humans the right to protect and pursue the survival of humans. The consequence would be to assure the continuation of humans by getting rid of the plague and cancer, etc. This argument enters into the realm of bioethics which can be considered on broader terms than classical human ethics.

ETHICS

The ethics of allowing patients to die arises when considering the quality of death issue and this, in turn, arises because of the fact that cancer many times results in a lengthy debilitating and pain-inducing situation that eventually leads to death. Thus, when cancer is compared to a disease with a short term prognosis, such as a massive myocardial infarction, the quality of death, i.e., dying of a heart attack, is better when considering the amount of suffering incurred.

The development of chemotherapy has allowed victims of cancer to choose, in many instances, to live or to die within a relatively short period of time. The development of alkaloids, such as morphine, has allowed the reduction in pain/ pain recognition, which alleviates a great deal of suffering by terminal diseases such as cancer, albeit leading the victim into drug dependency. The moral dilemma of 'to treat or not to treat' cancer cases is done on an individual basis between a physician and a patient. Take for example, a prostate cancer case in a sixty year old man who has not received a total prostatectomy. This usually allows a relatively slow but progressive course of the disease. However, such a case might develop a brain metastasis within five years and an ensuing death at sixty-five instead of living with treatment to perhaps eighty or ninety. Yet, the patient with a prostatectomy/chemotherapy might also die of metastasis. Thus, the art of the application of ethical reasoning is required for each individual case. These are common ethical considerations confronting medical oncologists today as they attempt to treat their patients. And these issues are involved in larger issues such as theories of progress and the significance of life.

With the advent of chemotherapy, such as the early use of the war gases sulfur mustard and nitrogen mustard for treatment of leukemia, it seemed a moral duty for physicians to treat patients, where no treatment was previously available. Such treatment is thought by some theologies to be an intervention of 'God's will'. Modern day chemotherapeutic 'cocktails' are capable of curing acute lymphocytic leukemia. It becomes a moral issue for society in attempting to deal with beliefs of 'no treatment' vs. 'treatment'.

SUMMARY

Bioethics/ethics is, in mathematical terms, a fuzzy set and a function of time. Therefore it has no absolutes. Two of the biggest questions that arise from a generalized ethical behavior in cancer research are as follows. Firstly, in basic cancer research, do we have the right to subject other species to experimental efforts simply because we have the ability to do so? Secondly, in clinical cancer research, is the moral dilemma that many times faces the clinical oncologist—do we have the right/option not to treat a victim of cancer (given that the option is available, i.e., an appropriate chemotherapeutic agent exists, etc.) in attempting to extend that person's life? The choice for society in assessing the 'correct' course of action involves a broad array of philosophical questions including euthanasia.

NOTES

- 1 The writer uses the terms bioethics and ethics as follows. Bioethics includes ethical/moral attitudes that arise among diverse biological forms, including, of course, those involving man. For example, an anthropologist might discuss a moral issue when speculating on social structure involving another hominid besides *Homo sapiens* such as *Homo neanderthalensis* or *habilis* or some prior non-*Homo* species. Therefore, bioethics is the more general set that includes the set termed classical human ethics.
- 2 Hancock, Ronald Lee, "Towards a generalized biotheology," *Ludus Vitalis* (submitted).
- 3 Kato, T., Hancock, R.L., Mohammadpour, H., McGregor, B., Manalo, P., Khaiboullina, S., Hall, M.R., Pardini, L., and Pardini, R.S. (2002), "Influence of omega-3 fatty acids on the growth of human colon carcinoma in nude mice," *Cancer Lett.* 187: 169-177.
- 4 Witt, O., Sand, R., and Pekrun, A. (2000), "Butyrate-induce erythroid differentiation of human K562 leukemia cells involves inhibition of ERK and activation of p38 MAP kinase pathways," *Blood* 95: 2391-6.