EDITORIALS

Library Resources and Continuing Medical Education

TWO ARTICLES in this issue serve to call attention to the importance and use of library resources in medicine and particularly in the continuing education of practicing physicians. In these days of emphasis on patient care audits and practice audits, and on hours of attendance at formally accredited courses or programs in continuing medical education, it is reassuring to know that recourse to the medical literature is not only readily available, but actually thrives. Physicians, and anyone else for that matter, learn best when they feel a need or are motivated (to use the current jargon) to find out more about a particular subject. This is what occurs when physicians seek out and use library resources. Also, it is likely to be a far more efficient and effective means of getting the information that a physician needs to him when and where he needs it, than is any medical audit or any carefully structured and officially approved course in continuing medical education.

No good way has yet been found to give this sort of continuing medical education the credit it deserves in terms of public accountability for the quality of patient care. But it should be encouraged, and where possible rewarded, and both the National Library of Medicine and the Washington State Medical Association are to be commended for their accomplishments in making it both possible and actually easy for practicing physicians to make greater use of library resources.

—MSMW

The Status of *In Vitro* Preimplantation Embryogenesis

WITH THE CURRENT ATMOSPHERE of growing concern about informed consent, human experimentation and Department of Health, Education, and Welfare regulations of fetal research, the review by Karp and Donahue of the status of *in vitro* preimplantation development, which appears in this issue of the JOURNAL, is timely. The state of the art is presented clearly. For a number of mammalian species *in vitro* oocyte maturation is possible in either serum supplemented or defined media. Human ova likewise have been matured *in vitro,* although they appear to be more fastidious in their culture requirements, and success rates have been notably lower. Fertilization *in vitro* has been accomplished for many lower mammals but has not been verified for human material. There is no case in which a Y chromosome has been shown in an early cleaving human zygote, and the criteria for claiming fertilization have been principally morphologic. Transfer of these presumptive human zygotes to a recipient uterus has never resulted in a successful implantation. Postfertilization *in vitro* culture of subhuman mammalian embryos is rather easily accomplished, but the only work in human embryo culture has been in conjunction with the above-mentioned fertilization attempts. In summary, *in vitro* oocyte maturation, fertilization, embryo culture and even transfer to a pseudopregnant uterus with subsequent birth of normal offspring has been accomplished for subhuman mammals such as mice. However, in humans only the first step of ova maturation *in vitro* has been unquestionably accomplished.

Why continue work along these lines? The clinical goal has been the circumvention of blocked fallopian tubes causing infertility. There are 2½ million childless couples in the United States who might be aided by such techniques. However, I believe that we should heed the suggestion of Marc Lappé, quoted by Karp and Donahue, that more animal experimentation including experience with primates is necessary be-

fore attempting such experiments in humans. It must be shown, at least, that the risk of a birth defect in offspring conceived *in vitro* is not significantly different than for offspring conceived *in vivo*. The use of *in vitro* techniques for sex selection, as suggested by Karp and Donahue, is unlikely. Separation of the X-bearing and Y-bearing sperm with subsequent artificial insemination will be simpler and considerably less risky, less tedious and less expensive. The methodology cited by the authors to achieve prenatal diagnosis of genetic defects is already in use and does not require an *in vitro* mode of reproduction.

From a less clinical view, research on the preimplantation stages of embryogenesis still has significant merit. There is good evidence that 10 percent of human conceptions are chromosomally abnormal. In spite of the fact that this is a significant cause of spontaneous abortion, with 35 to 50 percent of such abortuses being aneuploid, 15,000 chromosomally abnormal children are born each year in the United States. Studies of chromosomal behavior during the peri-fertilization period could provide important insights into the causes of this high rate of aneuploidy. Better understanding of this period of development could provide new avenues for the evolution of contraceptive research, and investigation of the biochemistry of early differentiation and de-differentiation could reap rewards in the understanding of another type of "new growth," cancer.

Much of the discussion of *in vitro* preimplantation development has been motivated by fear—fear of the power that comes with control, fear of science and fear of change. Out of this fear have come arguments that research in *in vitro* embryogenesis will cause us to lose our humanness. I would argue that the willingness to risk the dangers inherent in a changing and improving society is basic to our humanness. The arguments that control is not natural have even less merit. The goal of medicine has been to minimize human suffering by deliberate control. Diabetes is natural, insulin is an instrument of control. In reproductive medicine an early attempt at control was by selective mating. Today we practice positive direct eugenic control with the use of therapeutic abortions, prenatal diagnosis of genetic defects and fetal therapy (intrauterine transfusions). Joseph Fletcher has carried this argument to the extreme of stating that *in vitro* reproduction is more willed, chosen, deliberate and controlled than coital reproduction. Since these traits are essential to humanness he concludes that coital reproduction is less human than *in vitro* reproduction.

The National Committee on Protection of Human Subjects proposed, and the Secretary of Health, Education, and Welfare agreed that regulations regarding *in vitro* fertilization and preimplantation development not be stipulated but to leave these issues to a newly constituted National Ethical Advisory Board. An invitation was proffered for comments on appropriate future regulations. This is the appropriate time to start our ethical inquiries. As our society appears to be expanding from a sanctity of life morality to include a quality of life morality, and as we become a biologically aware society it will be necessary to reconsider many basic ethical issues related to our humanness.

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A BICENTENNIAL EDITORIAL

America in Process of Change

THERE IS GOOD REASON to believe that America is in a process of fundamental change. It is interesting to note that this is occurring without any identifiable leadership or even much discussion. Rather our leaders are looking to the led for some indication or clue as to where the nation may be headed. And such discussion as there is often seems to be somewhat beside the point against the backdrop of the poorly understood forces that appear to be at work.

The evidence that something fundamental is happening is clear enough. It is to be seen in changing attitudes toward virtually all the social institutions that have always formed the fabric of any society or of any nation. The churches, our educational institutions, our legal system, our economic system and even our government are all under attack and all seem unable to deal with the complexities of life in present-day America either effectively or to the satisfaction of the people. Even the institution of the family, which is considered so essential to normal development, maturation, a full and satisfying life and even graceful senescence, seems to be losing much of