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*The People's Doctor*

# ULTRASOUND DANGERS REVEALED

# Part I

The lead article in the April 23/30, 1982 *Journal of the American Medical Association* was headlined, "Question of risk still hovers over routine prenatal use of ultrasound." The article describes a recent study at the University of Manitoba, Winnipeg, in which the investigators found "a small but significant rise in the number of children (who had been exposed to diagnostic ultrasound) who were underweight at birth." Most of the panelists at the symposium quoted in this article "expressed concern about the possibility of delayed or subtle manifestations" of diagnostic ultrasound.

Ultrasound produces at least two biological effects — heat and a process called "cavitation" in which bubbles are created that expand and contract in response to sound waves. The first time I saw this cavitation process in action, a chiropractor turned on the therapeutic ultrasound machine in his office and placed a few drops of water on the part of the machine that was applied to the patient. I wish every reader of this column could have been with me to watch that water suddenly boil and bubble.

Speaking at that Winnipeg symposium, an investigator of the FDA's Bureau of Radiological Health said that ultrasound can produce shock waves in liquid (and I remind you that the infant inside the uterus is surrounded by liquid). In aminal fetuses exposed to ultrasound, investigators from the University of Rochester school of Medicine reported that the cavitation process can produce damage in insect eggs and in plant and mammalian cells.

Doreen Liebeskind, M.D. assistannt professor of radiology at Albert Einstein College of Medicine, suggested that long-term human studies of children exposed to ultrasound should look for behavioral changes, nerve reflex changes, I.Q. deficits, and shortening of attention spans. Although Dr. Liebeskind observed changes in cell appearance, motility, and DNA synthesis that were passed on in succeeding cell generations, neither she nor Arthur D. Blum, M.D., professor of pediatrics at Columbia University, felt they would be seeing cancer until a large number of exposed children had been followed for 15 to 20 years. All physicians should discuss the benefits and risks of ultrasound with their patients. The Winnipeg panelists recommended that doctors should not assume that diagnostic ultrasound is innocuous. Furthermore, the American College of Obstetrics and Gynecology has emphasized that physicians who operate ultrasound equipment must be properly trained.

It is my purpose to develop a questioning attitude among my readers. Similarly, radiologists who use ultrasound seem to have forgotten how they and their patients were burned (literally) by X-rays.

While there are many doctors who do not tell patients the darker side of the ultrasound story contained in the medical journals, I recently have learned that there are doctors who don't seem to know about the findings of ultrasound researchers. Following a recent national television appearance on the subject, I received many letters from physicians who requested more information on ultrasound. I even received telephone calls from the FDA and the AMA.

Many doctors believe that diagnostic ultrasound is an effective and safe procedure. Others, myself included, believe it is dangerous. Some patients will opt to listen only to the rosy side of the story. This ostrich-like posture, of course, precludes anxiety, since everyone knows that ignorance is bliss. But, times have changed. Today, reference books on the dangers of drugs, medical tests, and surgical procedures can be found in practically every public library. Journalists finally are beginning to ask the tough questions of doctors, in the

forms of radiation, there is considerable concern that it may also be sensitive to ultrasound. Until now, the fetus has been the focus of our concern; however, exposure of the mother could pose an equally or more significant risk. There is some evidence that if exposure is within the period of organogenesis (organ formation), congenital malformations may result from exposure to ultrasound in laboratory animals."

An important admission is contained in the following statement: "Further, it must be realized that animal studies may not have explored all possible adverse effects, and it is quite possible that animal studies will not reveal some potential problems in humans."

Those readers with long memories will recall that this was exactly what happened in the Thalidomide disaster, in which the animal studies gave no hint of the catastrophic skeletal deformities produced two decades ago by that morning sickness drug. Animals don't necessarily have the same reaction to drugs and therapies that people have. Within the animal kingdom itself, even different species react differently, thus highlighting one of the serious criticisms of animal experimentation.

After reading this account of the chamber of horrors of ultrasound, you might respond by challenging me with the benefits of ultrasound. But not so fast: The HHS report concludes, "It is not clear at this time whether ultrasound fetal monitoring is beneficial to the mother or fetus in terms of pregnancy outcome ...If there is no generally acknowledged benefit to the monitoring, there is no reason to expose patients to increased costs and possible risk...The question of benefit has not yet been resolved ...and the potential for delayed effects has been virtually ignored."

You might respond that some studies do not agree with these pessimistic findings. If so, you will be greatly interested in the critique in this publication of the optimistic studies. Regarding those studies which concluded that there was no evidence of ultrasound damage, the Health and Human Services authors point out: "Since there was no unexposed population in this study, such a conclusion was unfounded." In two other studies which reached similar conclusions, there again were no control populations.

In the final paragraph of the report, the publication concludes that long-term follow-up studies will be more difficult because "Control populations of unexposed neonates (newborn babies) are rapidly disappearing as the use of ultrasound diagnosis increases." In other words, so many women and their unborn babies are being exposed to so much ultrasound that it will not be easy to find pregnant women who are *not* being exposed to ultrasound in order that the two groups (exposed and unexposed) can be compared. Thus, ultrasound represents the latest in a series of medical technologies applied to mass populations without any scientific proof of benefit and with considerable evidence of risk.

The chance of a fetus being exposed to ultrasound today is greater than 50 percent. Many obstetricians are using ultrasound on practically all their pregnant patients, often several times during the pregnancy. A number of women have written me reporting that their obstetricians gave them ultrasound at each monthly prenatal visit.

Since obstetricians are not going to discipline each other for overusing ultrasound, as chiropractors, you should recommend precaution for every pregnant woman.

Ultrasound is the latest example of an unproven technology being sold to the public as being "perfectly safe." It falls in the same class as painting radium dials on watches, fluoroscoping children's feet in shoe stores, routine mammography, routine chest X-rays, radiation therapy for tonsils, exposing army personnel to atomic bomb tests — in each case, the medical profession failed to take the necessary steps to protect people against a malignant technology whose risks were already well understood.

But some doctors never seem to learn from history. Rather than using the cumulative experience of previous generations, many approach each new technology with an incredible air of wide-eyed innocence. Because of so many doctors' simplistic notion that history does not count (or even exist) and that newer is always better, they seduce millions into using technologies that will lead to major disability.

The prediction I made almost ten years ago — that dangers of ultrasound will multiply as its use is increased — has become reality. Maybe some doctors can't learn from history, but *you* certainly can.

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**Editor's Note:**

Dr. Mendelsohn's monthly newsletter is available for only $24 per year to those who send their check to:

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# ULTRASOUND DANGERS REVEALED — PART II

There are some very suspicious hints that children exposed in the womb to sonograms (diagnostic ultrasound) appear to be developing leukemia and other cancers in higher numbers than unexposed children. That frightening piece of information, which comes from Alice Stewart, a British epidemiologist who heads the Oxford Survey of Childhood Cancers, appeared in the New York Times (August 2, 1983) in an article entitled "'Safe' Form of Radiation Arouses New Worry."

This article plus two documents were mailed to me in a hand-addressed envelope with a return label from the U.S. Department of Health, Education, and Welfare, Public Health Service, Food & Drug Administration, Bureau of Radiological Health, Rockville, Maryland. This anonymous sender now joins the many other unnamed "moles" who, during the past seven years have passed on to me inside information, often secret, from the files of drug companies, medical schools, hospitals, baby food manufacturers, animal vivisection laboratories, and local, state, and federal government agencies. The determined action of these informants to bring these truths to public attention continually renews my confidence in the ethics and integrity, indeed nobility, of the average American.

For the past five years, I have been reporting on the ever-increasing evidence of ultrasound damage, and now, thanks to this informant, I am able to further share information about the hundreds of studies which have been reported by the World Health Organization (WHO) and the U.S. Department of Health and Human Services. In one of the two publications passed on to me entitled "Environmental Health Criteria 22: Ultrasound," the collective views of an international group of experts is reported.

A number of experimental studies cited in the above publication show reduced fetal weight and reduced fetal organ weight in animals exposed to ultrasound. One study on human beings suggests that lower birth-weight may result from exposure to diagnostic



ultrasound. Other studies suggest that ultrasound may induce "immunologic responses" in laboratory animals. Ultrasound effects may be enhanced if this technique is used in combination with X-rays and drugs; increased chromosome aberrations (deviation from the norm) in body cells have been observed after combined exposure to ultrasound and X-rays. Ultrasound also may have a synergistic (additive) action with such agents as heat, viruses, and medication. The liver of animals exposed to ultrasound showed impaired ability to clear foreign substances (colloidal carbon) from their blood.

Ultrasound also affects the blood platelets which are vital to blood clotting. This could have serious consequences for the patient, leading to "the blockage of circulation in small capillaries and subsequent complications of embolism (traveling blood clots) and infarction (tissue death, as in heart attacks), especially in patients who exhibit clinical conditions which might predispose them to thrombosis (blood clots), e.g.; during pregnancy or after surgery."

The other publication that came to me, the 134-page Health and Human Services booklet entitled, "An Overview of Ultrasound: Theory Measurement, Medical Applications, and Biological Effects," (July 1982) contains hundreds of citations of published studies. Its preface identifies the target audience as including the manufacturers of ultrasound instrumentation, health professionals, and scientists. But even though this book is full of statistics and formulas, the information, particularly on the cancer producing potential of ultrasound, is of interest.

The concern that ultrasound can lead to cancer and congenital defects emanates from experimental studies on the capacity of ultrasound to produce cellular damage. The mechanisms by which ultrasound damage is produced include heat, which can lead to tissue destruction; radiation force, which can lead to disturbance in blood flow, and cavitation (the production of bubbles in tissue, for example in the amniotic fluid), which can lead to functional changes in biologic cells. (The key changes caused by ultrasound include DNA degradation, cell lysis, cellular inactivation, modification of cellular ultrastructure, alterations of the plasma membrane, increases in frequency of sister chromatid exchanges, fragmentation of nucleoli, acoustic streaming of cytoplasm, damage to mitochondria, disturbance of the mitotic spindle, and increased frequency of giant cells.)

On the basis of the above abnormal cellular responses to ultrasound, one might predict a variety of forms of damage. Sure enough, experimental studies already have shown defective embryos — including abnormalities of eye pigmentation and head and thorax development, abnormal heart development, reduction in litter size, increase in skeletal abnormalities, delay in maturation of the nervous system, disturbance of bone marrow growth changes in contractibility of muscle, and suppression of radioiodine uptake.

Animal studies also show influences on the emotional behavior after birth, leading to the conclusion that this postnatal data, if confirmed, "presents a serious challenge to the assumption that fetal exposure to ultrasound is innocuous." The Health and Human Services publication concludes that "Latent periods easily could be as long as 20 years in the case of cancer development, or the effect may not be seen for another generation——. Because the human fetus is sensitive to other

ıme way as they've always asked ugh questions of politicians. Every ›ar, books critical of establishment edicine, often written by doctors emselves, offer the public a look at e confusion that exists within the ofession. There is no reason for any erate patient of the 1980s to be a ›lpless victim.

I expect the ultrasound enthusiasts give assurance about this relatively ›w procedure. Similarly, I expect ul-ısound critics to sound the alarm. And ›xpect that patients will go through a ›riod of confusion and emotional ›heaval, then embarking on a kind of ›mmon sense, rational investigation. ›e experience we will gain from inves-ıating both sides of the ultrasound ›ntroversy should prove quite valu-›le in facing up to each new "break-rough" in the ever-increasing tech-›logy of medicine.

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Dr. Mendelsohn's monthly news-tter, "The People's Doctor" is avail-›le for only $24 per year or $40 for a ›o-year subscription to those who ›nd their check to Post Office Box 982, vanston, Illinois 60204