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### HAVING CHILDREN–A MATTER OF HIGH TECHNOLOGY (Report of the 13th German Congress for Perinatal Medicine in Berlin)

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**Synopsis** – The 13th German Congress for Perinatal Medicine was held in Berlin, 1–4 December 1987. The Congress drew 2000 physicians and midwives to discuss the present state of perinatal medicine and anticipated developments including ultrasound, genetic diagnosis of fetal blood samples, use of fetal organs for transplants, the organizational restructuring of medical care for pregnant women, and the creation of new medical specialties.

A technocratic approach to the whole of reproduction forging is ahead. Fertilization, pregnancy, birth, and initial experiences with the newborn can be described less and less as "natural processes." Pregnant women can scarcely be distinguished any more from cars in need of an overhaul by specialized mechanics. Once attention is focused on the functioning detail, it is no longer difficult to start thinking of the womb as the cheapest transportable incubator for the fetus. That at least is the overall impression given by the 13th German Congress for Perinatal Medicine, which took place from 1st to 4th December 1987 in the International Congress Centrum (ICC) in Berlin. Two thousand physicians and midwives were able to follow with interest scientific-technological keen progress in gynecology and obstetrics, which was reported in around 100 papers. For the protagonists of intensive care during pregnancy and birth, this is not only a meaningful and necessary area for intervention, but also rewarding and attractive for one's scientific reputation. As Congress chairman, Professor Dr. Saling, said in his opening speech: "On average, in the industrialized countries life expectancy is about 73 years, in other words some 26,500 days. If we set against this the duration of a birth of around 12 hours, or half a day, the relation between the duration of intensive care at birth and

a whole life comes to roughly 1 : 53,000. Would it really be worthwhile to concern ourselves exclusively with the fifty-three thousandths of our life remaining after birth naively disregarding safety in the most concentrated period of danger of our whole life?"

The statistics on infant and prenatal mortality are proof of progress in perinatal medicine. From 1980 to 1986, when clinical research into prenatal diagnosis and therapy increasingly became everyday medical practice, infant mortality per 1000 live births sank from 12.7 to 8.6. Perinatal mortality and stillbirths per 1000 live births decreased from 11.6 to 7.6.

Professor Saling said that in his clinic, the department for obstetric medicine in the Berlin-Neukölln Hospital, newborn infants with a specific deficiency during pregnancy achieve a survival rate of 30 percent, whereas in general only 0 to 5 percent survive. In specialized perinatal centers, a therapy success rate of up to 90 percent is apparently achieved in fetuses with Rhesus incompatibility, while in an average clinic only 50 percent have a chance of survival.

# ON TECHNICAL DEVELOPMENTS IN PRENATAL DIAGNOSTICS AND THERAPY

In the last 10 to 15 years considerable developments have taken place in prenatal

diagnostics and therapy. The ultrasonic scan, which by now is used in every pregnancy at least twice, today merely forms the foundation of an intricate structure of highly complicated diagnostic and treatment techniques for pregnancy and birth. If we add to these fertilization techniques (for example, in-vitro fertilization) and treatment procedures in neonatology and pediatrics, then a picture emerges of a fine net of possibilities of intervention and interference in human reproduction and the early stages of childhood. The fetus has been discovered as patient, the "patients' register" of obstetricians would seem to be expanding. Professor M. Hansmann of the University Women's Clinic in Bonn stated: "Modern symptom-diagnostics, in particular the ultrasonic scan, has in recent years presented us with a relatively large number of patients formerly unknown to us."

The more usual it became to see the image of the embryo or fetus as a matter of routine on the monitor of the prenatal examination laboratory, the more attractive it became for the scientists to make direct access to the fetus possible, to bypass the protective shell of the womb, as it were. The most striking feature of perinatal medical development is therefore the steady increase in invasive diagnostic methods (i.e., carried out in the body of the pregnant woman). This also is true of invasive therapies, the possibilities of which have not yet been exhausted. The ultrasonic technique also serves in therapy as an operative visual aid to place the various items of equipment correctly in the uterus.

A classical example of an illness symptom easily ascertainable today for obstetric physicians is the excessive secretion of water into the body cavities or the connective tissue of the fetus leading to easily identifiable abnormalities on the ultrasonic monitor. Over 100 different causes can lead to this clinical picture: socalled congenital (i.e., inborn) causes, for

example Rhesus incompatibility, are just as familiar as illnesses acquired during pregnancy, for example, viral infections (rubella, toxoplasmosis, etc.). If no medical steps are taken, then according to Professor Hansmann, 95 to 100 percent of all affected fetuses die in the womb. In the past, out of fear of unforeseeable damage or difficulties during pregnancy, women were frequently advised to terminate their pregnancies. Available treatment was effected formerly via the ingestion of medicine by the woman; the active ingredients were passed on to the fetus via the placenta. Only in the most difficult cases of Rhesus incompatibility, or antibody reactions were blood transfusions controlled by X-ray or with a fetoscope undertaken in the abdomenal area of the fetus. During this operation, a rupture of the fetal membrane can occur, which is why this technique was never widely adopted.

#### NEW TECHNIQUE SUPPLIES FETAL BLOOD

This intervention is altering at present with a new technique: needling. Professor Hansmann-a leader in this area in the Federal Republic - has used it about 500 times since 1985 to extract blood from the fetus. In needling, the pregnant woman is given a local anesthetic and a needle is inserted directly into the veins of the umbilical cord. But other puncture points are also possible, for example the heart ventricles. "And, if need be, several times a day," claims Professor Hansmann, "One to two millilitres of blood are enough to make up a complete laboratory for the foetus." This extends diagnostic possibilities to the most varied blood analyses.

The fetal blood also supplies the material for genetic diagnoses (e.g., chromosome analysis and DNA analysis). Until the twenty–second week of pregnancy these are carried out with chorion biopsy or amniocentesis. Professor Hansmann reported on the speed with which karyotyping (chromosome analysis) can be effected from fetal blood: the results are available within 48 hours. And in the various diagnostic procedures it is not so much a matter of alternatives, but rather of a graduated program of constant supervision. Thus, reports of medical practice show that women who have allowed a chorion biopsy to be carried out on them also receive an amniocentesis at a later stage as a check.

The scope for decision making for subsequent treatment is based on the current level of medical know-how, which is at present steadily growing in the area of prenatal therapy. There is still a gap between prenatal diagnoses and possibilities of therapy. Certain illnesses of the fetus can already be treated in the woman's body, for example, with blood transfusions. The catheters are surgically inserted into the fetuses, for example, for the decompression of hydrocephalus. In the case of blockage of the urinary passage, bladder catheters can be inserted temporarily or permanently. Medicines, too, are introduced with needles through the abdominal wall and the uterus to reach the fetus. Professor Saling was able to report on a case in which a 900 gram fetus could quickly be injected with lungreviving substances before the birth was induced. Nevertheless, people are not content with what has been achieved so far. In particular, the pharmacological methods of treatment of the fetus are still in the initial stages. Here, it is said, a lot of basic research has still to be done. Furthermore, the time for survival therapy for premature births is constantly being shifted forward. If it was 1000 grams birth weight two years ago, today a mere 600 to 700 grams are considered the limit.

### BELLER: THE SUBJECT OF DONATION OF ORGANS OF SECONDARY IMPORTANCE

At the point where medical treatment is no longer feasible, medical or eugenic abortion is advised. But the present wording of the abortion law (Paragraph 218) will not remain unaffected by developments in perinatal medicine. This is shown most clearly by the case of Professor Dr. Fritz K. Beller, who achieved questionable fame through the release of anencephalics (newborn infants without cerebrums) for the donation of organs. Beller expressed indignation at the Congress on the misunderstandings that had been provoked by the media in the public mind by his action. The subject of the donation of organs was definitely of secondary importance, he said. The definition of brain life and brain death in its significance for eugenic abortion was the issue. He could not understand why some are dead enough to be aborted, while others are not dead enough to be made available as organ donors. If agreement existed on the formula "Brainless = Brain dead" then the question of the donation of organs would be solved too.

When the Congress participants were questioned on the future of fetal therapy, in particular, on the position and evaluation of somatic gene therapy, they behaved very cautiously at the press conference and reacted with disturbing calm. Perinatal physicians, they said, were representatives of applied research, and gene therapy was still a long way away. But the newly published statements in the literature for the Congress sound different. There one can read that parent-cell transplantation into bone marrow represents a possible method of treatment for infantile immune weaknesses and some hematological syndromes, for example, hemophilia. As prenatal parentcell transplantations have already been carried out in animal experiments, "it can only be a short step to transfer these methods to the human foetus" (Hosse and Golbus, 1987). It is true that only the intrauterine transplantation of foreign cells is being reported here, but it is obvious that it is just a short step to the extraction of body cells, the repair of genetic defects in vitro, and the reimplantation of the corrected body cells.

# WHO HAS THE EXPERT KNOWLEDGE ON THE CHILD?

Although the Congress speakers may not have openly expressed an opinion on questions of gene therapy, the impression I gained of the present state of the discipline is that gynecology is moving in the direction of "building block" reproduction.

Although logical for the Congress participants, the way physicians argue about the "expert knowledge on the child" appears absurd to the uninvolved observer. Professor Saling: "We recently formulated the well-founded demand that the modern obstetrical and prenatal physician should be a specialist in the unborn child and the neonatologist a specialist for the already born child." If gynecologists and obstetricians have for the present busily played their part in turning embryos and fetuses into independent individuals, now they fear losing their patients to the pediatricians. Logically, there is a call for improved training of gynecologists in the area of prenatal diagnostics and therapy and, at the same time, for an intensification of pregnancy care. This should ideally be structured in stages:

Stage I: All pregnant women will be introduced at specialist level, in serial examinations, to prenatal diagnostics.

Stage II: At the slightest suspicion of an irregularity in the pregnancy or in the presence of one of the known definitions of risk pregnancy (e.g., age of the woman over 35 years, previous spontaneous abortions) transfer to a department specializing in obstetric medicine.

Stage III: Setting up of special perinatal centers with highly complicated technology for the treatment of the most serious fetal illnesses. The precondition for this selection model is, in the opinion of Professor Saling, not only a change of heart among the gynecological colleagues, a detachment from the belief that they can do it all themselves – "all round dilletantism"– but also stepping up the campaign against the natural childbirth supporters.

For a growing or young life it is none the less tragic to suffer damage or death, just because some irresponsible manipulators of public opinion propagate home births, birth with one's GP or some other unsuitable place of birth, and have spread unquestioning faith in natural birth so that individual parents have entered on unnecessary risks out of emotional euphoria. These injuries differ in no radiation regard from injuries, pharmacological injuries or other considerable environmental injuries.

#### PATHOLOGICAL PREGNANCY

In the minds of the protagonists of progressive obstetric and prenatal medicine, pregnancy and birth are in fact per se pathological.

In order to prove the opposite, nothing remains for pregnant women but to rely on the results of prenatal diagnostics. Pregnant women are delivered by technoapparatus medicine in a double sense: from their child, but at the same time too, from their own responsible relations with the being that is growing in their body. To the degree in which the fetus - called the patient - is anchored medically, legally, and also in the social consciousness as independent subject, the physical intactness of women based on a union of the woman's body and of the fetus is no longer an individual right. Perinatal physicians admit that through their therapeutic interventions they may possibly damage the health of the woman. It is being forgotten more and more frequently that doing something for the pregnant woman also means helping the With medical-technological fetus. progress, not only will the opportunities for therapy increase but also the conflict situations and difficulties in decision making for the pregnant woman. And what happens when a woman, out of fear of the health risks, objects to surgical intervention in her uterus? In the United

States, several women have already been legally required to submit to surgery. Fortunately, as was unanimously reported at the press conference, it was still possible in the Federal Republic to convince the parents of the necessary therapeutic measures. However, it is also possible in principle for the physician to obtain court permission for surgery as "the child's lawyer."

## REFERENCE

Hosse, W. A. and Golbus, M. S. 1987. *Pränatale medizin.* Wolfgang Holzgreve, Berlin.