"DRUGS IN LABOUR: WHAT EFFECTS DO THEY HAVE TWENTY YEARS HENCE?"

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Childbirth is a normal physiological event. However, since the advent of universal hospitalisation, for the majority of women childbirth has been transformed into a medical event where labour is processed, monitored and controlled by the medical profession from beginning to end.

Although childbirth propaganda promotes the normality of birth, few women giving birth in large centralised medical establishments will experience a normal birth. Instead, they will find themselves and their babies subjected to a whole range of powerful drugs.

Although women allegedly give informed consent for the use of those drugs, the reality is that the majority of women have little information about drugs in labour. The propaganda promotes the "advantages" of drug use, but little is said about the disadvantages, particularly the long-term effects. It is those effects that I would like to examine.

All drugs have unwanted effects, some more serious than others. In the 1950's and 1960's thousands of babies, all over the world, were born with severe limb abnormailities as a direct result of their mothers taking thalidomide during their pregnancies. It took ten years for researchers to establish that thalidomide was to blame, while the medical profession and the drug companies vigorously denied any connection.

DIETHYLSTILBOESTROL

During the 1940's and 1950's the hormone diethylstilboestrol (DES) was used on pregnant women in the belief that it could prevent miscarriage. Unfortunately, it was widely adoped -- particularly in the United States -- before any randomised clinical trial was done to show whether it was effective. When such a trial was eventually done the drug was shown not to work. Nonetheless some doctors continued to use it. The time bomb effect came to light when a cluster of young women in one town developed an unusual form of cancer -- clear cell carcinoma of the vagina. Had they developed a more common cancer -- squamous cell cancer of the cervix, for example -- the link would not have been made. They also had other problems, such as abnormalities of the genital tract. However, more subtle difficulties were discovered only when British researchers (Vassey et al., 1983) studied the now grown-up offspring of women who had been involved in a randomised clinical trial, in which half were given stilboestrol when pregnant, with the other half serving as controls. Exposed children were significantly more likely to have serious mental illness, and boys were less likely to have married. Furthermore, 40 to 50 percent of DES-expesed daughters have pronounced uterine structural abnormalities. Infertility was reported among the women and diminished fertility among the men.

More than four to eight times as many of the DES-expesed children went on to have tubal pregnancies as the unexposed. A quarter of all pregnancies among the DES-exposed children went on to miscarry compared with the normal 10 percent rate. Premature birth occurred in three times as many babies.

For DES-exposed sons, nearly a third had testicular abnormalities that decrease male fertility, including undescended testes, sperm abnormailities and low sperm counts. It would appear that many of the non-physical but serious adverse effects would not have been identified except for the fact that exposed girls had developed a particularly unusual cancer. In the United States, the granddaughters of women given stilboesterol in pregnancy are now suing for injuries they suffered because of alleged stilboesterol-induced abnormalities in the genital tracts of their mothers who were exposed in the womb. This is an example of how damage may be transmitted from generation to generation. Therefore, one would expect the medical profession to be particularly careful about using drugs in pregnancy and labour.

Demerol

One of the most common drugs used in the labour ward is pethidine, a synthetic, addictive, narcotic drug that is similar to morphine. In Britain, it is also known as meperidine and, in America, Demerol. It has become the drug of first choice for the majority of UK midwives, mainly because it is the only pharmacological narcotic they are licensed to prescribe.

Commonly, women are given a dose of 150 mg., yet those midwives who use Demerol sparingly often give a much smaller dose, 25 mg. for example, and claim it is just as effective.

Demerol readily crosses the placenta. The baby may have greater sensitivity to the drug because of the immaturity of the blood-brain barrier and the circulatory bypass of the liver (Burt,1971). If the baby is expected to be born within an hour, most midwives try to ensure that Demerol is not given because of the risk that the drug will be present in the baby. However, research shows that Demerol is most likely to have a depressant effect on the fetal respiratory system if the dose is administered two or three hours before birth. The higher the dose to the mother the greater the effect on the fetus (Yerby, 1996). Because the baby's liver is immature, it takes a great deal longer—eighteen to twenty-three hours—to eliminate the drug from its system.

Although 95 percent of the drug is excreted in two to three days, this can have significant implications for breastfeeding. Rajan demonstrated that "Demerol proved to be the (drug) most inhibiting to breastfeeding." By breastfeeding, the mother often unknowingly gives the baby a second dose of Demerol as the drug is transferred to the baby through the breastmilk. She may not be aware that Demerol is the cause of her "sleepy" baby and her problems getting the baby latched on.

Little research has been done into the long-term effects of Demerol. However, infants with high Demerol exposure were more likely to cry when handled on days seven, twenty-one and forty-two, as were those with a high cord blood concentration on day twenty-one. Demerol also reduced the infant's ability to quiet himself once aroused. This was still observed at three and six weeks (Belsey, 1981). It is interesting that researchers consider three to six weeks to be "long-term." Our definition would be in years.

For those babies whose breathing is depressed at delivery naloxone is given to reverse the effects, but the reversal is only temporary unless it is given in an adult dose (Weiner, 1977). We know of no research that investigates the short or long-term effects of naloxone on the baby.

The pain of labour

A consistent criticism Association for Improvements in the Maternity Services (AIMS) members make of obstetrically managed births is that there is pressure to deliver all babies as quickly as possible, as if this were a benefit to both mother and baby. We know of no study that asked women whether or not they wanted a faster but more painful labour.

It is extremely difficult to assess the level of pain a woman is experiencing; different women react in different ways. Interestingly, when a woman fails to experience pain relief from Demerol or other drugs, she will often be told that she has a "low pain threshold." I have yet to hear the problems described as a failure of the drug to act

effectively. In a survey of pain relief in childbirth (Chamberlain 1993) 84 percent of midwives rated Demerol as very good or good, compared with only 71 percent of women and 72 percent of partners. The authors speculated: "Perhaps the drowsiness of the woman following the administration of pethidine (Demerol) is associated with effective pain relief by the midwife?" From the woman's perspective Demerol has been described as causing a loss of control, disorientation, dizziness and as one mother described it: "I felt that my brain had gone out to lunch. I could not put a sentence together, but it did nothing for the pain—it just shut me up."

Women who end up with caesarean sections have often experienced induced or accelerated labours, and Demerol is often one of the many drugs they have been given during that time. However, Demerol delays maternal gastric emptying and, in concert with sedation, increases the risk of aspiration and thus the danger of general anaesthetic (Olofsson 1997).

Chamberlain's study Pain and Its Relief inChildbirth found that Demerol appeared last on a list associated with enjoyment of labour, being in control of labour and delivery, and physical and mental health afterwards. Demerol was unlikely to be wanted for future delivery and was most strongly associated with problems in the baby such as side effects, temperament, and feeding difficulties. It gave low satisfaction for pain in labour and especially pain during delivery, was associated with poor physical and mental health in the mother after delivery and had a fairly low rating for enjoyment of labour and control.

Epidural anaesthesia

Instead of urging non-pharmacological methods of pain relief (for example, water pools), the latest research paper to reveal the inadequacy of Demerol's pain-relieving effects suggests that epidural anaesthesia should now be widely available (Olofsson, 1996). The authors have few worries about the adverse effects of this drug.

In 1981 Rosenblatt published a six-week follow-up of the effects of epidural anaesthesia, which showed that immediately after delivery, infants with greater exposure to bupivacaine in utero were most likely to be cyanotic and unresponsive to their surroundings. Visual skills and alertness decreased significantly with increases in the cord blood concentration of bupivacaine, particularly on the first day of life but also throughout the next six weeks. Adverse effects of bupivacaine levels on the infant’s motor organisation, his ability to control his own state of consciousness and his physiological response to stress were also observed. Interestingly, this study considered six weeks to be a "long-term," but what are the long-term effects at five, ten, twenty or fifty years?

Women who choose water for pain relief have been warned that a rise in the water temperature over 37°C could cause a rise in the mother's temperature and result in brain damage in the babies, with no research evidence whatsoever to support that suggestion. As a result, many UK hospitals have refused women access to water pools. However, research by Lieberman (1997) revealed that intrapartum fever greater than 100.4°F

occurred in 14.5 percent of women receiving an epidural. If the labours lasted longer than eighteen hours the fever rates increased to 36 percent. Not a single paediatrician has expressed concern about this risk.

Brain development

In her submission to the Food and Drug Administration (FDA), Yvonne Brackbrill commented that at that time there had been at least forty studies of neurobehavioural changes in human infants that were observed after administration of anaesthetic and pre-anaesthetic agents to their mothers during labour and delivery. "None has shown that drugs enhance or improve behavioural functioning in infants," she wrote (Brackbrill, 1979).

In the human being, the period of vulnerability to central nervous system damage from exposure to drugs and chemicals lasts a long time. Even after birth, important areas of the brain are still developing and differentiating at a very rapid rate, and because of this rapid period of growth they are maximally vulnerable to damage. It has been estimated for example that the brain growth spurt in the cerebellum lasts for eighteen months after birth and in the hippocampus for about four and a half years.

Some parts of the brain are fairly well developed at the time a human being is born, but other parts are not. Some parts, particularly the cerebellum, are very underdeveloped, and the introduction of toxic substances during this period of rapid development, even for a single acute administration, can either kill cells or cause aberrations in them. When cells proliferate in the cerebellum, that’s not the end of it—they have to migrate into their final position and link up with other cells. Both the rate of cell death and the patterns of migration of cells in the cerebellum have been shown to be very sensitive to the introduction of toxic substances (Brackbrill, 1979).

Desmond Bardon, a respected British psychiatrist, asked what prolonged exposure to maternally administered drugs means to the later neurologic development and behaviour of the offspring. Drug-induced biochemical alterations within the brain of the about to be born or newly born infant have the potential for permanently disrupting the normal link-up of the baby's brain cells by altering the biochemical markers which guide the cells into their proper places. It is somewhat analogous to the unintentional spilling of a chemical over telephone wires that are being connected according to the colour code at the end of each wire. The chemical removes the colour from the wire ends. The technician must continue to connect the wires, not knowing exactly which wires to connect with which. The circuitry is completed: it functions, but imperfectly.

While the process of cell migration is not yet fully understood, present knowledge of neurobiology suggests that the normal biochemical message left along the pathway of the neuron by the preceding cell (as it travels to its proper place within the central nervous system) serves to direct the next brain cell into place. Drug-induced changes in the biochemical message can disrupt this vital process. Could dyslexia be the result?

Drug addiction

In the developed world there is an epidemic of dyslexia, drug addiction and behavioural problems. I suggest that one of' the reasons for this is the over-use of powerful drugs in labour.

I find the hypocrisy about drug use quite astonishing. In the United States, it appears that women who smoke or drink alcohol in pregnancy can be publicly chastised; if they take heroin, or other street drugs, they can find themselves in jail or threatened with removal of the baby and their other children. But no one raises even a murmur about the far more powerful addictive drugs that are used on the labour ward, and no one appears concerned about the effects these drugs can have on a still developing fetal brain.

There are plenty of studies examining the immediate effects of drugs in labour, but where are the studies examining the long-term effects? By that I mean effects which can emerge, five, ten, twenty or even fifty years later.

I suggest we are sitting on a time bomb, and we persist in ignoring the research because of the horrendous implications. No one wants to admit that their care is creating drug addicts, but I believe the overuse of drugs in pregnancy and childbirth is doing just that.

In a well-designed case control study at the Karolinska Institute in Stockholm in 1990, researchers compared children exposed to pain relieving drugs in labour with those who were not and discovered an increased risk of drug addiction later in life (Jacobson et al., 1990). In 1988 they showed that when nitrous oxide was given to the mother the child was five and a half times more likely to become an amphetamine addict than a brother or sister born to the same parents. In their paper in the British Medical Journal(1990), patients who had died from opiate addiction were compared with brothers and sisters; the researchers found that if the mothers had been given opiates or barbiturates or larger doses of nitrous oxide the risk of opiate addiction to the child in later life was increased 4.7 times. In a further study, researchers discovered that the risk of drug addiction was related to the hospital in which they were born. In other words, the likelihood of a child developing drug addiction in later life depended on the labour ward policies of the hospital the mother chose for the birth, and I quote: "For the amphetamine addicts, hospital of birth was found to be an important risk factor even after controlling for residential area" (Nyberg, 1993). Jacobson and Nyberg's research suggests that the use of opiates, barbiturates and nitrous oxide in labour causes imprinting in the babies, and we are now reaping the whirlwind.

The U.S. Department of Health and Human Services estimated that one out of every nine American children is significantly learning disabled despite having normal intelligence. Seventy-five percent of these children are born at full term into middle and upper class families. The U.S. National Institute of Health estimates that 75 percent to 85 percent of all disabled children in the United States were born within the normal range of birth weight and gestational age and had no familial or sociologic predisposing factors (Haire, 1989).

In 1984, Desmond Bardon suggested that a significant proportion of the millions of children and youths in the United States who are afflicted with significant mental and neurologic dysfunction are the victims of obstetric medications administered with the very best of intentions to the mother during labour and birth in medicalised maternity units. Not only have Bardon's concerns not been addressed, but since that time even more women and babies are subjected to high levels of drugs in pregnancy and labour, and little has been done to investigate the possibility that the huge increases in drug addiction and associated crime are a direct result of the drugs used on the labour wards. While various agencies work hard to pull the bodies out of the river, no one is investigating who is pushing them in upstream. It is time they did.

References

- Belsey, M.E. et al. (1981, April). The influence of maternal analgesia on neonatal behaviour: 1. Pethidine, British Journal of Obstetrics and Gynaecology, 88: 398-406.
- Brackbill Y. (1979, Nov.). Effects of obstetric drugs on human development. Paper presented at the conference Obstetrical Management and Infant Outcome arranged by the American Foundation for Maternal and Child Health, New York.
- Burt, RAP. (1971). The fetal and maternal pharmacology of some of the drugs used for pain relief in labour. Br Journal of Anaesthesia, 43: 824-836.
- Chamberlain, G. ed. et al. (1993). Pain and its relief in childbirth: the results of a national survey conducted by the National Birthday Trust. Edinburgh: Churchill Livingstone.
- Haire, D. (1989, May 30). Obstetric Related Drugs: Their effects on parturition. Paper presented to the ISPOG Conference, Amsterdam.
- Jacobson, B. et al. (1988).Obstetric pain medication and eventual adult amphetamine addiction in offspring. Acta Obstet Gynaecol. Scand., 67: 677-682.
- Jacobson, B. et al. (1990). Opiate addiction in adult offspring through possible imprinting after obstetric treatment. British Medical Journal, 301:1067-1070.
- Lieberman, E. et al. (1997, March). Epidural analgesia, intrapartum fever, and neonatal sepsis evaluation. Pediatrics, 99(3): 415-419.
- Nyberg, K. et al. (1993). Obstetric medication versus residential area as perinatal risk factors for subsequent adult drug addiction in offspring. Paediatric and Perinatal Epidemiology, 7: 2332. Olofsson, Ch. et al. (1996, Oct.). Lack of analgesic effect of systemically administered morphine or pethidine on labour pain. British Journal of Obstetrics and Gynaecology, 103(10): 968-972.
- Rajan, L. (1994). The impact of obstetric procedure and analgesia during labour and delivery on breast feeding. Midwifery, 10(2): 87-103.
- Rosenblatt, D. B. et al. (1981).The influence of maternal analgesia on neonatal behaviour: 11 Epidural bupivacaine. British Journal of Obstetrics and Gynaecology, 88: 407-413.
- Stillman, R. J. (1982, April 1). In utero exposure to diethylstilbestrol: adverse effects on the reproductive tract and reproductive performance in male and female offspring. Am J Obstetrics and Gynecology, 142(7), pp 905-921.

- Vessey, M. P. et al. (1983). A randomised double-blind controlled trial of the value of stilboestrol therapy in pregnancy long-term follow-up of mothers and their offspring. British Journal of Obstetrics and Gynaecology, 90: 1007-1017.
- Wiener, P.C. et al. (1977). Effects of naloxone on pethidine induced neonatal depression. British Medical Journal, 11: 228-231.
- Yerby, M. (1996, May). Managing pain in labour Part 3: pharmacological methods of pain relief. Modern Midwife: 22-25