

Dads and Birth Defects: The Inside Story

by Christina Jeffery

It used to be thought that only the mother controlled the health of her unborn child so that if any problems in fetal development arose, they must be traced to her alone. New studies, however, have broadened this idea, showing that the blame for some problems in fetal development can also be placed on the father. A male's lifestyle, such as the use of alcohol, cigarettes, and other drugs, as well as exposure to certain industrial chemicals, has been shown to affect characteristics of sperm cells in ways that harm the fetus.

Alcohol

Recently, there has been much emphasis on a birth defect called Fetal Alcohol Syndrome. This defect results when a mother drinks during pregnancy, causing malformation in the development of the fetus. A question has been raised on what role a father plays in causing FAS. Can a male's drinking result in the embryo being exposed to alcohol at fertilization, and therefore get FAS? The answer to that question is, "no." Research done so far has shown that there isn't a way for a growing fetus to obtain FAS by means of the father. This does not mean, however, that the baby isn't affected by its father's drinking.

Alcohol consumed by the male can lead to a variety of problems in the reproductive system. Unlike females, whose eggs are all made during pre-birth development, males continuously make sperm throughout their lives. Some studies have shown that alcohol consumed by the male can enter the testicles through the bloodstream. The drug then seems to mutate some characteristics of the sperm. After exposure, they can end up with deformed heads or tails, hindering their mobility. Alcohol could also be transported to the ova via the semen and expose the embryo to levels of this toxicant. In addition, alcohol-affected semen could alter embryo maturation.

These mutations can lead to birth defects, miscarriage, or illness in the resulting baby. When children with fathers who are heavy drinkers and non-alcoholic mothers are compared with those with FAS, the children of the drinking fathers are not grossly malformed, but they do have certain intellectual and functional deficits, and they are also more likely to be hyperactive.

A number of studies involving animals have been carried out, looking at the effect of paternal alcohol consumption on the offspring. Studies have shown that exposing a male animal to alcohol can lead to changes in embryonic and fetal development, litter size, offspring viability, and increased susceptibility of the offspring to infection. Infant malformation and mortality also resulted from paternal alcohol consumption.

A series of rat studies have exemplified these results. Compared to normal rats, male

alcohol-sired rats had significantly lower levels of testosterone, as well as disturbances in hormonal function, less beta endorphin, and lighter seminal vesicles. Female offspring from fathers who were exposed to alcohol had abnormal baseline levels of certain stress-related hormones, and responded differently to stress than normal control rats.

Another study showed that a father rat that is exposed to alcohol, and then had a drug free period with enough time to restore normal hormonal status, still produced male and female offspring suffering abnormal development. This information shows that alcohol, even alcohol use after a limited time, could have some residual effect on the success of the future father. In his report, "The Effects of Paternal Exposure to Alcohol on Offspring Development," Dr. Theodore J. Cicero says that "it seems clear that paternal pregestational alcohol administration can produce adverse effects in the offspring." Alcohol also seemed to affect the male user's sexual performance, on top of causing problems with fertility, viability of offspring, and maturation of the fetus and newborn.

Dr. Cicero sums it all up when he suggests the possibility of three factors which could be affected by male alcohol consumption. First, alcohol could affect characteristics of the sperm - perhaps mutating genetic material. Second, sperm may be "chosen" in such a way that only a few are intact following exposure to alcohol. Third, alcohol could alter the chemical composition of the semen, which may influence the activity of ejaculated sperm. In any of these ways, the sperm is harmed by alcohol, which in turn, causes a negative impact to the development of the fetus.

Even with all this evidence before us, it is still difficult to conclude the exact effects of alcohol consumed by the male. Comparing some studies is difficult because of limited subjects and loose controls. Also, a study carried out in England showed paternal drinking to be unrelated to predicting birth weight in humans. Dr. Sterling Clarren, a top researcher in the field of studying the effect of alcohol on a fetus, says that "it is possible but not yet proven, that alcohol does alter sperms."

With all this said, a male should still really think twice before reaching for that mug of beer or glass of wine. Not only are you hurting your body, but you could be affecting the lives of any future children. Alcohol consumed by the male before conception can cause birth defects, so plan ahead if you are wanting to father a healthy child. You could be doing more harm, both to yourself and others, than you think.

Smoking

In America, smoking is a pressing problem. Many times, teenagers become hooked, and then continue smoking throughout their adult life. Most everyone has seen the Surgeon General's warning saying that lighting up could cause lung cancer and other health problems for the smoker. There is a new focus on how smoking can affect the next, unborn generation.

Dr. Bu-Tian Ji has conducted research in China which shows the connection between a father's smoking and childhood cancer. China is a nation in which men

smoke more than women. His team isolated families with no past history of cancer where Dad smoked and Mom didn't. The team concluded that the children of men who had smoked at any point in their lives were thirty percent more likely to have cancer than children of fathers who didn't smoke. Past smoking habits still seemed to affect the health of the child, so the hypothesis was made that perhaps the environment of the sperm is damaged by male smoking, causing possible damage to fresh sperm, or hindering the body's ability to protect the new sperm. Dr. Ji's study did not include the possibility of the culprit being second hand smoke inhaled by the mother, but other studies have shown that the rate of cancer was not affected when it only was the mother who smoked. Therefore, it is reasonable to believe that the sperm may be the cause of this health problem.

Like alcohol and other drugs, cigarettes harm the human body. In males, smoking has been shown to affect the sperm. The deformed sperm are more likely to cause miscarriage and problems for the fetus. Studies in the 1960's showed that fetuses with fathers who smoked were more likely to struggle for their lives than the offspring of non-smokers. The studies also showed that the death rate was forty percent higher among a group of subjects with smoking fathers.

Smoking can cause even more problems, both for Dad and the baby. The bodies of males who light up can produce free radicals, or molecules which damage cell parts and the chromosomes in sperm. Lower birth weight and increased risk of disease in babies has been connected with a father's smoking. Cigarettes that are smoked by a male can contribute to infertility by causing varicocele, a swelling in the veins of the scrotum, which can cause a miscarriage. Smoking half a pack or more a day has been shown to reduce sperm count by as much as twenty percent.

If you are planning to start a family, a good way to begin would be to quit the puffing. It not only hurts your own body, but can have an effect on the health of your unborn child.

Chemical Exposure and Other Substances

Can a male's job affect his ability to reproduce? Studies have shown that it can. A male's exposure to lead has been associated with his partner's miscarriage. This substance and others, such as Ethylene oxide, the pesticide DBCP, and ionizing radiation can negatively affect human reproduction. They may adversely affect the male reproductive system, and sperm count, which can lead to infertility, miscarriage, or still birth.

In addition to problems from chemical exposure at work, when a male ingests cocaine before conception, the cocaine has been found to bind the sperm cells and thus expose the baby at fertilization and cause numerous problems.

Conclusion

The secret to a healthy family is in the hands of the father as well as the mother. The new research that has been carried out has shown how much a father can affect the life of his unborn child. Alcohol consumed months before conception can cause

defects in the sperm. Since sperm cells are made continuously throughout a man's life, they are at more risk of mutation, thus increasing the chance that the baby may have problems. A male should plan ahead for a healthy family. Good steps would be to quit smoking, drinking, and using drugs, and also do as much to protect oneself from exposure to harmful chemicals at work. Such actions will not only lengthen a person's life span, but will also increase the possibility of having healthy children in the future.

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