Is Milk Linked to Cancer?

With new data from studies focusing on estrogens, androgens, and insulin growth factor-1 (IGF-1), scientists may be able to determine why some adults who drink milk may face a slightly higher risk of cancer. Test tube research and studies involving adults over the past decade have linked cow's milk with an excess risk of prostate cancer and, to a lesser extent, breast and ovarian cancer.

An interesting aspect of milk is its impact on IGF-1. Milk is a rich source of the substance, but people who drink milk also have more IGF-1 in their blood. Many studies have linked elevated IGF-1 levels with cancer risk.

Although scientists have identified some suspects (such as milk's natural combination of hormones, growth factors, and other biological-active chemicals), there is no certainty. A new study by researchers at the National Cancer Institute in Frederick, Maryland, offers some insight.

Hormones are produced in the body for its own use; they act as conductors, telling the genes when to activate. This is typical in the body, but external hormones can create problems. Estrogens can ignite the growth of many tumors, even at amazingly tiny concentrations.

IGF-1 production is usually turned on when human growth hormone (hGH), which is produced in the pituitary gland, hits certain tissues. IGF-1, the natural force, becomes hGH's stimulant to local cell growth. Researchers at Dartmouth Medical School worry about other hormones in milk, such as "male" androgens. Androgen is any substance, natural or synthetic, that promotes masculine characteristics. Estrogens may fuel tumor growth in reproductive tissues, but certain androgens have the capacity for increasing the number of estrogen receptors. Extra receptors permit more estrogen—including any from milk—to unlock the cellular machinery that can promote tumor growth. In other hormone systems, if excess hormone is present, the body often reduces its production. In adulthood, milk-derived hormones are being introduced into a system that did not anticipate them, according to the researchers.

Studies have linked high levels of IGF-1 with cancer risk. Milk is a rich source of the substance, and people who drink milk accumulate more IGF-1 in their blood. Endocrinologists at New York University School of Medicine say that studies have also shown that IGF-1 in breast tissue can completely take the place of hGH; that is, it can trigger cell growth without any outside cues.

Breast development, although linked to estrogen, is inadequate in the absence of IGF-1. When excess IGF-1 or estrogen occurs in the presence of the other, breast hyperplasia (an increase in the number of cells) occurs. Women with breast hyperplasia are at a higher risk of breast cancer, perhaps almost doubling of risk.

(Source: Endocrine Review, February 2009.)

Diabetes and Male Hormones

Men with type 2 (non-insulin-dependent) diabetes tend to have low testosterone levels. If so, testosterone replacement therapy with a gel applied to the skin might improve their response to insulin and may enhance sexual function, according to the results of a new trial.

As men grow older, their levels of the essential androgen hormone testosterone decline dramatically. Decreasing testosterone levels have been linked to age-related health ailments such as erectile dysfunction, muscle wasting, and, most notably, diabetes. Restoring previous levels of testosterone may help avert the disease, helping aging men decrease their reliance on medications for diabetes. The researchers concluded that young type 2 diabetic patients have significantly lower plasma concentrations of total and free testosterone and inappropriately low luteinizing hormone and follicle-stimulating hormone levels with a high prevalence of hypogonadotrophic hypogonadism, when compared with type 1 diabetic patients of comparable age.

(Source: Diabetes Care, 2008; 31:2013-2017.)

Sports Machismo May Be a Cue to Male Teen Violence

The sports culture surrounding football and wrestling may be fueling aggressive and violent behavior not only among teenage young males but also among their male friends and peers on and off the field.

Derek A. Kreager, Ph.D., Assistant Professor of Sociology in the Crime, Law, and Justice program at Penn State University, says:

"Sports such as football, basketball, and baseball provide players with a certain status in society. But football and wrestling are associated with violent behavior because both sports involve some physical domination of the opponent, which is rewarded by the fans, coaches and other players."

Using a national database of 6,397 male students from 120 schools, Dr. Kreager analyzed the effects of team sports (football, basketball, and baseball) and individual sports (wrestling and tennis) on male interpersonal violence. The study looked at self-esteem, reports of prior fights, and the popularity of the various sports.

Compared with non-athletes, football players and wrestlers faced higher risks of getting into a serious fight by more than 40 percent. High-contact sports that are associated with aggression and masculinity increase the risk of violence, he concluded.

"Players are encouraged to be violent outside the sport because they are rewarded for being violent inside it," Dr. Kreager explained.

However, the violent behavior was not restricted to players alone. The risk of getting involved in fights also increased with the proportion of friends who played football.

"Males with all-football friends are expected to have a 45 percent probability of getting into a serious fight, more than 8 percentage points higher than similar individuals with no football friends and almost 20 percentage points higher than males with all-tennis friends," Dr. Kreager indicated.

As for individual sports, wrestlers are 45 percent more likely to get into a fight than non-wrestlers, while tennis players are 35 percent less likely to be involved in fights. The team sports of basketball and baseball, however, did not lead to fights.

The findings run contrary to a belief that participation in sports discourages antisocial behavior among boys because of the emphasis on teamwork, discipline, practice, good sportsmanship, and fair play.

"My results suggest that high-contact sports fail to protect males from interpersonal violence," Dr. Kreager said. ..."Players might be getting cues from parents, peers, coaches, and the local community, who support violence as a way of attaining 'battlefield' victories, becoming more popular, and asserting 'warrior' identities."

Pressure on teams to win games may be contributing to the problem, because it makes coaches want to build a stronger team by selecting aggressive players and encouraging a "win at all costs" attitude both on and off the field. A compromise solution, Dr. Kreager adds, is to break the cycle of aggression.

"There is definitely a gate-keeping role for the coach," he explained. "You want to sanction them somehow and make sure they are not rewarded, or else other kids might get a wrong message, and that might perpetuate the violence off the field."
