

86 OF 172 / Set 1 Copyright (c) 1999 Los Angeles Times 000099025

Little Women

* Girls are hitting puberty sooner, but not because of hormone additives in food, experts say. The culprits? Better nutrition and changing sociological factors.

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Overheard at a girls' soccer game:

Mother No. 1: "Are girls maturing faster, or is it my imagination?"

Mother No. 2: "I hear it's the hormones in our food."

And so the rumor goes. At the soccer field, the playground or in front of the dairy case at the health food market. Are kids really growing faster these days? And, if so, why?

"I hear other mothers talk. We all feel that girls are developing faster, and we have all heard the hormone thing," said Avril Wood, a Yorba Linda-based food marketing consultant and mother of two girls, ages 8 and 6. Like most parents, Wood would like to postpone the onset of puberty, and all its baggage, as long as possible.

But she and other parents may find the forces are against them. Pediatricians, nutritionists, researchers and school nurses all report that girls are developing breasts and getting their periods slightly earlier than girls 40 years ago.

Pediatricians and school nurses are changing their practices to address that development: "We don't worry about breast development at age 8 anymore" because this is no longer considered an abnormal medical condition requiring extensive treatment, said Encino pediatrician Howard Reinstein. According to a 1997 study reported in *Pediatrics*, the journal of the American Academy of Pediatrics, 15% of white girls and 48% of African American girls showed signs of breast development or pubic hair by age 8. The reason for the racial disparity is unclear. Last year, the National Assn. of School Nurses issued a new policy recommending that

schools begin reproductive health education in the fourth grade rather than the fifth, when most schools teach it. "Nurses were seeing more fourth-grade girls experiencing their first menses and not being prepared," said Judy Robinson, the association's executive director.

But few experts blame this earlier maturation on the sex and growth hormones farmers give cattle.

"That's just another urban myth," said Ruth Kava, director of nutrition for the American Council on Science and Education. "Lack of exercise and increased body fat are much likelier suspects."

Dietary hormones aren't taken too seriously because many other factors are known to affect puberty's onset. Nutrition, body fat, ethnicity and maternal genes have all proved to play a role. Some suspect social influences: our culture's sexualization of young people, society's pressure on young girls to look grown-up, and even the presence or absence of a girl's biological father. But estrogen artificially implanted in steer? Not likely.

The Role of Nutrition

Health experts know nutrition plays a role, because girls in this country today are reaching menarche (the age when girls get their first period) sooner than girls 100 years ago. In 1890, the average age of menarche in the United States was 14.8 years. Today it's 12.5, according to the study in Pediatrics, which tracked 17,000 girls to find out when they hit different markers of puberty. Other developmental changes begin much sooner, often at age 8.

The main reason girls today develop sooner than those in the first half of the century, researchers now agree, is nutrition. Earlier development is a sign of better health, they say, not of pathology.

Body fat also triggers the pituitary gland, a small gland in the brain that is the traffic signal for puberty. Thus, heavier girls mature faster than lean girls. The increase of childhood obesity has almost definitely brought down the age of puberty. Conversely, dancers and female athletes who train hard may have very delayed or absent periods.

Race is also a factor: Blacks, on average, mature faster, while Northern European whites are among the latest to develop. (The two groups reach menarche at 12.1 and 12.8 years, respectively.) As our population becomes more racially mixed, girls as a whole mature sooner. Society also puts more pressure on girls to look grown-up, said Reinstein, which may psychologically influence them to develop earlier.

Finally, father-daughter relationships may play a role. In a study published in September in the Journal of Personality and Social Psychology, researchers at Vanderbilt University in Nashville concluded that girls who have close relationships with their biological fathers during their first five years of life experience relatively late puberty, compared with girls raised without their fathers present or by stepfathers. Researchers speculate that exposure to the scent of unrelated adult men accelerates puberty, while exposure to the scent of a biological father inhibits it--a phenomenon that occurs in other mammals.

Looking at Other Factors

So, before pointing the finger at hormones in food, researchers look to other factors.

"We have better nutrition, increased obesity, more single parents, the sexualizing of youth in pop culture and racial demographic shifts," said David Murray, research director at Stats, a Washington, D.C., science research group. "And against that background, people are blaming hamburgers?"

But events in Puerto Rico some 15 years ago give critics of hormone additives a basis for concern. Back in the early and mid-'80s, children, mostly girls, in that commonwealth were developing breasts as toddlers and even menstruating as infants. The culprit in the now well-documented incident, which affected at least 3,000 children, turned out to be the hormones farmers gave farm animals, which provided the dairy and meat products in that part of Puerto Rico.

The levels in Puerto Rico were exceedingly high contrasted with the relatively low levels used in U.S. agriculture today, Murray said.

The second episode that gave hormones a bad name came several years before the Puerto Rico problem. In 1979, DES (diethylstilbestrol), a strong estrogenic hormone being implanted into cattle, was deemed carcinogenic and taken off the market.

The hormones used in U.S. beef today were approved after 1980, notes Lester Crawford, professor of food and nutrition policy at Georgetown University and a former top official at the U.S. Department of Agriculture. DES, he adds, gave "all hormones a bad name."

The hormones farmers now implant in steer either occur naturally in the animals or mimic those that occur naturally, he adds. They include estrogen, progesterone and testosterone, and two synthetic hormones, one

that mimics testosterone, and one that mimics estrogen.

"There's no way that the five hormones approved [for implantation in cattle] in the United States affect development or the onset of puberty. It's not pharmacologically possible," Crawford says.

But while nothing in the literature suggests that hormones in food affect puberty, Murray adds, "that's different from saying that a link is not possible."

Effects of Growth Hormones

Farmers give growth hormones to dairy cattle and sex hormones to beef cattle to boost production. By injecting dairy cattle with bovine growth hormone (BGH) every two weeks, milk production is increased 10% to 15%, said Jonathan Beckett, a professor of animal science at Cal Poly San Luis Obispo.

But that doesn't affect the milk, says Beckett. The additive is undetectable in the milk. Also, BGH only makes cows grow, not people, he adds. "The worry that kids will grow extra large if they drink milk with BGH is ludicrous."

Farmers implant sex hormones into the ears of steer to help the animals grow bigger, faster and to lower costs, Beckett says.

"When you implant sex hormones in steer, they gain weight 10% to 20% faster. The bottom line is for every \$1 you spend, you get \$20 back in growth," Beckett says.

The beef that results has far less estrogen in it than many common foods. For example, said Beckett, a 3-ounce piece of beef from a steer without added hormones has 1.2 nanograms of estrogen. (A nanogram is one-billionth of a gram.) The same amount of beef from an implant-treated steer has 1.9 nanograms. In comparison, 3 ounces of potato have 225 nanograms and peas have 340 nanograms.

A girl before puberty naturally produces 54,000 nanograms of estrogen a day; a boy, 41,500. Nonpregnant women produce 480,000 nanograms a day.

"We're virtually bathed in natural estrogen" in amounts many times what is found in the beef we buy, Murray says. And none of the other hormone additives are known to pose the health risk of estrogen, which has been linked in studies to some cancers in women.

Still, some people take little comfort in such assurances, preferring

food products that are more like what Mother Nature intended.

"It just doesn't seem natural to manipulate livestock. Animals should be allowed to grow at their natural rate," says Brian Baker of the Organic Materials Review Institute in Eugene, Ore., a standards-setting organization for certifying organic products.

Baker says that while science has not proved definitively that hormones are unsafe, neither has it shown them to be safe. "Those outside the organic community say innocent until proven guilty; we say guilty until proven innocent."

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