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Civilization's Cancer

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WE HAVE OFTEN seen in the breast a tumor exactly resembling the animal the crab. ... In this disease the veins extending out from the unnatural growth take the shape of a crab's legs. We have often cured this disease in its early stages, but after it has reached a large size no one has cured it without operation.... We attempt to excise a pathological tumor in a circle in the region where it borders on the healthy tissue."

So writes Galen, the second-century Greek physician, on the tumor that gave us the name cancer — Latin for "crab." It seems impossible that he should have had the success he claims, yet the passage also seems astoundingly modern. Although one would add some refinements — chemotherapy, for example, which can improve survival in the vast majority of cases — he is still on target: we often cure breast cancer in its early stages, surgery is still key, and no other treatment approaches it in power. But Galen's first phrase, "we have often seen," requires some intensifying. Numerically, we have a problem that Galen could not have imagined, and it is one that will almost certainly worsen.

In the United States, breast cancer is the commonest cancer in women — about one woman in 10 can expect someday to get it — and the most frequent cause of cancer death. There are 130,000 new breast malignancies each year in this country; about a third of them will be fatal. Even discounting the added cases that are attributable simply to the fact that women are living longer, the incidence of the disease has been increasing for decades. And this fact is underscored by international comparisons. The differences are not subtle. Women of 50 in the United States have about six times the incidence of breast cancer found at the same age in Taiwan or Japan. And the difference increases with age; taking all postmenopausal women, it is twentyfold. Although the Japanese have the world's lowest rate (the Dutch probably the highest), they are far from alone in that low range, which is shared by many other non-Western countries.

A genetic hypothesis springs to mind, because we know that breast cancer can run in families. But this thought stumbles against the fact that people of Chinese and Japanese descent who migrate to the United States approach our colossal numbers in only a couple of generations. Thus breast cancer — like lung cancer, coronary heart disease, even dental caries — must be preponderantly a "disease of civilization." That is, it is caused — or at least a very large proportion of cases is caused — by something in the life style of Western industrial nations.

Fine. But what? In the cases of lung cancer, heart disease and caries, we know the causes; we could reduce those conditions to medical curios now with enough will.

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Breast cancer is more prevalent in Western nations - in part, because of diet, early first menstruation, late first motherhood and late menopause.

But in breast cancer, we have a complex puzzle with only a few pieces in place. Yet there are outlines of a picture that suggest much of the landscape of women's lives.

Richard Peto of Oxford University, Dr. Marc E. Lippman of Georgetown University, and others have summarized the relevant epidemiology. Initial studies pointed to risk factors associated with reproduction, and these have proved true: early first menstruation, late first motherhood, and late menopause all increase the risk, but breast-feeding reduces it. (A study of women who nursed only one breast showed a large protective effect on that side.) Other risks stem from diet. Obese women, and women of any shape who eat a lot early in life are eventually vulnerable. And there are powerful relationships between food and reproduction.

Among traditional rural people in underdeveloped countries, first menstruation comes late — frequently two or more years later than the average, about age 12, in our youngsters. Although there is a period of adolescent infertility among these rural people, first birth comes within a few years. With no other way to keep infants alive, breast-feeding is universal and prolonged. As for diet, it is drastically different from ours. Obesity, which is for them the privilege of a well-to-do few, is for us a scourge of the many; and the fat content is much higher in our cuisine than in theirs. Thus most major risk factors for breast cancer other than genetic predisposition put our civilization at a distinct disadvantage. As we look back in our own history, say a century or two, puberty was at least two years later, postponement of motherhood unusual, breast-feeding the rule, and menopause years earlier. Our current obesity epidemic had not begun, and fat in the diet was low.

What accounts for the dramatic historical changes that helped prepare the way for a rise in breast cancer? In a sense, they all boil down to the standard of living. Increasing dietary quantity in calories, including fats, is a product of industrialized food production and the breeding of new, fatter cows. The same factors, along with disease control, have accelerated growth, producing bigger children as well as earlier puberty; they also help explain later menopause. Modern dairying made breast-feeding seem superfluous to some. And, finally, a much-needed emancipation of women has lengthened the period between puberty and first birth. More than lung cancer (largely a one-risk-factor disease) and coronary heart disease (aggravated mainly by smoking and saturated fat), breast cancer has deep causes intrinsic to civilization: the quality of life, the robustness of child growth, adequate infant feeding and women's search for equality. More irrevocably than the others, it is a disease of civilization.

If this analysis is right, the Japanese should catch up to this country soon, and we should get still worse. But the puzzle remains. Dr. Stanley G. Korenman of the University of California at Los Angeles has tried to embrace many aspects of risk with his "estrogen window" hypothe-

sis. It holds that unopposed estrogen — that is, estrogen whose adverse effects are not counteracted by a balancing hormone — increases risk once it circulates to the breast, estrogen being a promoter that enables carcinogens to do their work. Estrogen does circulate in the body between puberty and menopause, and it becomes low during breast-feeding. And antiestrogen therapy does help fight cancer after it appears. Thus, the hypothesis that unopposed estrogen is directly implicated in breast cancer has considerable elegance; add the fact that fat cells can make estrogen, and it even subsumes obesity. There are inconsistencies; it remains controversial. But few argue about the importance of the risks related to the reproductive life cycle.

GALEN'S CLAIM NOTWITHstanding, the natural history of breast cancer — the course of the illness without modern treatment — was and is devastating. In a typical hospital in Middlesex, England, during the 19th century, half of all patients died within 3 years, and 80 percent in 5. The cancer would typically spread through the lymph ducts draining the breast to the nodes under the arm, and from there to the rest of the body, attacking vital organs. Treatment today is vastly more hopeful. If caught early enough and treated surgically — in many early cases, only part of the breast need be removed — more than 90 percent of patients will survive 10 years. New evidence strongly suggests that chemotherapy following surgery improves survival still further. And even for advanced cases, judiciously combined surgery, radiation and chemotherapy provide survival statistics that the women of Middlesex would have envied.

Also, the frontier is moving. New methods for distinguishing the rapidly growing tumors from the slower ones in early stages are coming into use, and other approaches are on the horizon; they will enable more rational assignment of women to treatments and open more specific paths of research. Other studies are directed to finding out what it is about early first pregnancy that seems to oppose cancer; if it can be bottled, you may be able to postpone motherhood without increasing your risk. And current research suggests that some types of breast cancer may be unleashed by damage to a gene that also blocks a rare form of eye cancer; such discoveries will eventually lead to the goal of specific genetic control.

And yet none of it seems enough. This is the leading killer of women in the middle of life, at the peak of their human value. It is starkly disfiguring in a culture that comically overvalues the shape of the youthful female form. It involves painful, prolonged therapies with uncertain results. And despite all efforts it is still frequently deadly — a fact that never leaves a woman's mind for very long. Profound psychological disturbance is common, a consequence of disfigurement, pain and fear.

I SOMETIMES WONDER WHAT sets our research priorities. I wonder, for instance, what would happen if a few men in the White House and other haunts of power suffered from testicular cancer. What would happen if more than 100,000 men a year got this disease in the United States alone, and if a third of them, after agonizing treatments, eventually died. Of course, this would still not quite do it, because you can lose a testicle without changing your wardrobe. Still, the approximation will do. Something tells me that if testicular cancer had reached such proportions, and if it were still increasing, we would by now have seen an unprecedented commitment of resources to its cure. As AIDS patients seemed not to count because they were addicts and homosexuals, have breast-cancer patients counted less because they were women? Researchers have expressed concern, for example, that there are not enough controlled clinical trials, in which women are randomly assigned to a variety of diets and treatments at the frontier of knowledge. Areas of basic research should be strengthened as well. A cure for breast cancer ought to be near the top of anybody's feminist program.

Other big killers — lung cancer, heart disease, even AIDS — have clear paths to primary prevention. Not so breast cancer. The links in the causal chain are much more complex. We can't turn back the clock on the age of puberty, nor, fairly, on the social trend toward postponed motherhood. Avoidance of obesity and strict reduction of fat in the diet will prevent thousands of cases a year, but many thousands of others will still be with us.

Secondary prevention — screening — is our current best bet. Self-examinations are not perfect, but they save lives, and would save more if more women did them. Likewise mammograms. The fear of radiation is almost unfounded. If 1 million women at age 40 received mammograms, 10 excess cancers could be caused by the test; but almost 800 cancers would be caught. One might as well refuse vaccinations for one's children on the theory that some deaths are caused by the shots. As for women at increased risk — with a mother or daughter infected by the disease, or a history of benign breast disease — refusal to get a mammogram is simply toying with your life. Make it a feminist issue: stay reasonably slim, keep fat intake very low, know your breasts and examine them monthly, insist on a regular mammogram, and write your Congressional representatives to find out why they aren't doing more to eliminate this dreadful scourge from our lives. ■