

The incidence of breast cancer in childless women is higher than in women who bear children. Even more important is the recent finding that a woman who has her first child under the age of twenty has a considerable protection against breast cancer. From epidemiological studies, it would seem that the decade following puberty (13-23) is a critical period in establishing the future risk of breast cancer.

The fact that breast cancer is common in women who have passed the menopause when the estrogen levels are lower can be readily explained on the basis that those cancers are the end result of a process which began many years before.

The carcinogenic effect in humans and in lower animals is characterized by a long latent period of some ten to twenty years or even longer. A carcinogenic agent exerting its effect over a relatively short period can induce biological changes in cells that progress slowly over a period of many years and end up as clinical cancer. One classical example relate to workers in aniline factories who are exposed to the carcinogenic dyes for as short a period as one year and develop cancer of the bladder some twenty years later. Withdrawal of the carcinogenic agent did not arrest the progress of the latent lesions. Clinical, pathological and experimental evidence support the view that breast cancer follows a similar pattern.

Our studies of whole serial sections of the breast, supported by clinical experience have shown that cancer of the breast is not a sudden event or an accident in a previously normal tissue, but rather the end result of a series of changes which began many years before. Benign tumors change into precancerous lesions before ending up as fully established cancers. It is not inconceivable that the causative agents that result in breast cancer exert their initial effect at a young age, possibly in that critical post-puberty decade.

The tissues of the breast present a highly sensitive target for the ovarian hormones and have a great potential for the development of cancer. In all probability there is no direct etiological relationship between the estrogens and breast cancer. It is more probably that the carcinogenic effect of the hormones is to alter the biological state of the cells and thus render them vulnerable to the action of another agent—possibly a latent virus.

Recognizing the possible risk of breast cancer as a side effect of the oral contraceptive, the American Cancer Society, as early as 1961, supported research studies on this problem and a recent report of the Advisory Committee on Obstetrics and Gynecology referred to the need for well-designed studies and long-term support for research on the breast and uterus.

The early detection of breast cancer often presents formidable difficulties. Not infrequently when a lump is first felt, either by the patient or by her physician, it is already in a relatively advanced stage of cancer. This is further complicated by the patient's delay in consulting her physician for fear of facing a diagnosis of cancer with possible loss of the breast. Periodic biannual examination of the breasts helps greatly in early detection and prevention by surgical removal of precancerous lesions.

Recent progress in the technique of X-ray examination of the breasts (mammography) has led to the detection of breast cancers that are too small to be felt manually. Users of oral contraceptives should have periodic X-ray examination of the breasts.

Women using the oral contraceptives often develop fullness and tenderness of the breasts and in some cases actual enlargement which persists. Microscopic studies of biopsy material from patients who have taken the oral contraceptives show increased cellular activity, reflecting the stimulating effects of the estrogens. In my own surgical practice, I have a series of patients who have had two or three breast biopsies. In some, the biopsies were performed before the patient started to take the contraceptive and a second or third biopsy was performed after the patient had been on the contraceptive pill for several years. Study of surgical specimens under these circumstances presents a unique opportunity to observe the tissue changes that may be related to the stimulating effect of the estrogenic component of the oral contraceptive.

One has to be careful, however, in interpreting microscopic changes in tissues under the influence of hormonal stimulation because such changes can be so pronounced as to be indistinguishable from fully established cancer. I cite the following example: My colleague, the late Sir Lenthal Cheatle, removed the breasts of a female infant who had died at birth. He prepared microscopic