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Breast Thermography and Cancer Risk Prediction

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Thermography makes a significant contribution to the evaluation of patients suspected of having breast cancer. The obviously abnormal thermogram carries with it a high risk of cancer. This report summarizes the results of patients with questionable or stage Th III thermograms. From approximately 58,000 patients, most of whom had breast complaints, examined between August 1965 and June 1977, the conditions of a group of 1,245 women were diagnosed at initial examination as either normal or benign disease by conventional means, including physical examination, mammography, ultrasonography, and fine needle aspiration or biopsy, when indicated, but nevertheless categorized as stage Th III indicating a questionable thermal anomaly. Within five years, more than a third of the group had histologically confirmed cancers. The more rapidly growing lesions with shorter doubling times usually show progressive thermographic abnormalities consistent with the increased metabolic heat production associated with such cancers. Thermography is useful not only as a predictor of risk factor for cancer but also to assess the more rapidly growing neoplasms.

Cancer 45:51-56, 1980.

DURING 12 YEARS of clinical practice utilizing thermography as one of the techniques for breast examination, we had the opportunity to observe the women by repeated studies over a long period of time. The patients were usually symptomatic but a small number were examined because of cancerphobia or a family history that placed them in a high risk category. There was no mass screening of asymptomatic women as is currently under investigation in the United States. Among the patients who initially had questionable thermal anomalies of asymmetry, disordered vascularity or local hyperthermia, but no physical, mammographic or echographic evidence of malignancy, there were some who subsequently were proven to have breast cancer.

Similar observations have been reported by other investigators^{2,3,8-10} who have suggested that among the so-called "false-positive" thermograms there are patients with carcinomas that are not yet palpable or visible on mammography. This report will provide some statistical information in these situations.

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The authors thank Harold J. Isard, MD, Albert Einstein Medical Center, Philadelphia, Pennsylvania for his critical suggestions and his invaluable help in the preparation of the manuscript.

Accepted for publication January 19, 1979.

Patients and Methods

Approximately 58,000 patients were examined in our Department of Breast Diseases between August 1965 and June 1977 (Fig. 1). Of these, 1,563 women between 32 and 53 years of age (approximately 2.5% of the total) were initially classified as thermographic stage Th III. In our classification^{5,7} thermograms are distributed in five stages from Th I to Th V, according to an increasing probability of cancer. Each stage is identified by thermovascular patterns and areas of hyperthermia, either singly or in combination. Stage Th III represents equivocal situations in which the thermal signs are suspicious but not conclusive and it was this group that was analyzed.

On the first visit the complaints and history are recorded and the patients undergo physical examination, mammography, thermography, and frequently ultrasound examination. If aspiration or needle biopsy is performed, a prompt report of cytologic or histologic findings is obtained.

Thirty-six of the women in category Th III did not return as requested, leaving a total of 1,527 for evaluation. With the exception of the 282 patients with a diagnosis of cancer established on the initial visit, all were followed by re-examinations for periods of time of up to 12 years. It is worth noting that approximately 90% of patients presenting with Th IV and V have a diagnosis of cancer established on first visit as contrasted with only 18% of the Th III group.

The frequency of re-examinations depends primarily upon the clinical impression which is arrived at by