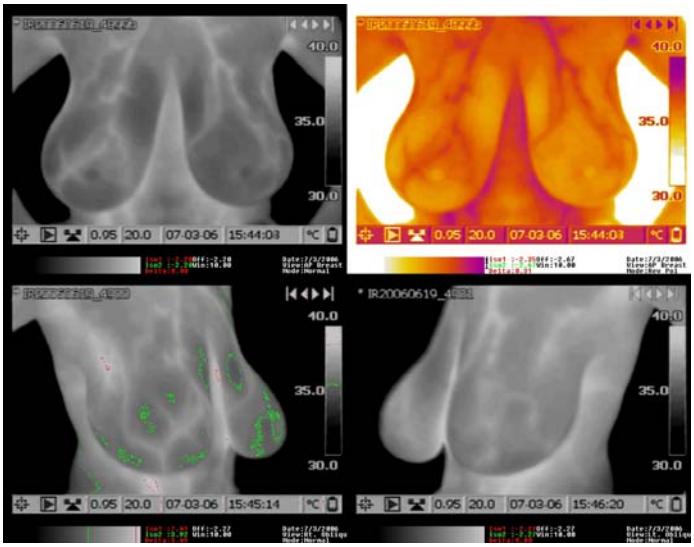
Breast Thermography

Safe, effective, pain-free breast cancer screening



Breast Thermography:

- **Well-researched with over 800 studies**
- **Earliest known indicator for the future development of breast cancer**
- **Does not use harmful radiation**
- **Does not cause breast pain or trauma**
- **Proven to assist in earlier diagnosis**
- **Well-suited for fibrocystic, dense, and augmented breasts**

Infrared breast thermography is based on the fact that blood vessel activity surrounding a developing cancer is almost always higher than in normal breast tissue. With an ever-increasing demand for nutrients, cancerous tumor cells release chemicals that open existing blood vessels as well as create new ones. Vascular alterations resulting from cancer frequently result in temperature changes on the surface of the breast which can be demonstrated with infrared thermography. Thermal abnormalities identified with infrared imaging are among the earliest signs of a pre-cancerous or cancerous lesion of the breast. The ability of infrared thermography to

identify these vascular abnormalities and the resulting temperature changes are well-established in research trials [1,2,3,4,5,6].

Obtaining thermal images of the breasts provides valuable information. This is especially true of women with large, dense, fibrocystic, or augmented breasts, which are usually difficult to image with mammography. Mammography is dependent upon the density and the size of a breast mass and any additional dense breast tissue makes interpretation difficult. Because thermography is not in any way impacted by density, cysts, or breast size (it is looking at blood flow), it is an extremely useful diagnostic tool to evaluate and manage these women.

For all women, a thermogram is like an infrared fingerprint of the breast. It will not change over time unless there has been an alteration in blood flow. It is for this reason that thermography is ideal not only for breast cancer screening, but also for monitoring suspicious findings identified with other tests such as ultrasound, mammography or with physical examination.

Thermography also has prognostic value. The more abnormal a thermogram is, the more likely the cancer is to be aggressive and spread rapidly. In fact, a persistently abnormal thermogram carries with it a risk of developing breast cancer that is 22 times greater than that of the average woman [7]. This knowledge is invaluable because steps can be taken to screen a high-risk candidate more often, leading to earlier diagnosis. Most experts agree that early diagnosis and treatment improves survival. Extensive clinical trials have shown that breast thermography improves long-term survival rates of its recipients by as much as 61% [1]. In addition to assisting with early diagnosis, an abnormal thermogram can allow a woman to adopt preventive strategies that may inhibit cancer from developing or decrease the likelihood that it will spread.

Infrared Technology

All objects with a temperature above absolute zero emit infrared radiation. Breast thermography utilizes a sophisticated infrared camera that captures digital images of the breast which can be directly converted into accurate temperature values. The resulting thermal images of the breast are a representation of blood flow and can be interpreted with computer assistance. Disorganized, asymmetric blood vessels not corresponding to the smooth, curvilinear vessels typically found in normal breasts are indicative of an abnormality. Additionally, high blood vessel temperatures represent excessive blood flow and are also characteristic of cancer [2].

Research: Thermography and Cancer Detection

- **Over 800 studies on breast thermography exist** in peer-reviewed medical literature. The number of women tested in this database exceeds 300,000.
- Breast thermography was approved in 1982 by the FDA for breast cancer screening.
- Spitalier and associates used thermography to screen 61,000 women over a 10 year period. They found that 91% of non-palpable cancers were detected by infrared imaging and that of all the patients with cancer, **thermography was the first indicator of the disease in 60% of the cases** [8].
- The preceding authors also noted that "in patients having no clinical or radiographic suspicion of malignancy, a persistently abnormal breast thermogram represents the highest known risk factor for the future development of breast cancer" [8].
- In a study consisting of almost 40,000 women, Haberman and associates used breast thermography and physical examination to determine if mammography was recommended. They discovered that **30% of the cancers found would not have been detected without thermography** [9].
- Thomassin and associates studied 130 confirmed breast cancers that ranged from 3-5 mm. Of the 130 cancers, 10% were detected by mammography alone, 50% by thermography alone, and 40% by both techniques. Thus, there was a thermal abnormality in 90% of the patients and the only sign of cancer in 50% of the cases [10].
- In a study by Gautherie and associates, the ability of thermography to improve survival rates was researched. Patients were followed-up for 5 years. **A 61% increase in survival was noted in the patients who had additional testing after initial thermographic abnormalities were discovered.** The authors summarized the study by stating that "the findings clearly establish that the early identification of women at high risk of breast cancer based on the objective thermal assessment of breast health results in a dramatic survival benefit" [1,11].

Research: Thermography and Risk Evaluation

- Gros and associates screened over 55,000 women, following 1,527 patients with initially healthy breasts and abnormal thermograms for 12 years. Forty percent of these women developed breast cancer within 5 years. The authors concluded that **"an abnormal thermogram is the single most important marker of high risk for the future development of breast cancer"** [7].

- Spitalier and colleagues followed 1,416 patients with abnormal breast thermograms. They found that a persistently abnormal thermogram is associated with a breast cancer risk of 26% at 5 years. Within this study, 165 patients with non-palpable cancers were observed. In 53% of these patients thermography was the only test which was positive at the time of the initial screening [12,13].

Breast Thermography and Mainstream Medicine

With the amount of research supporting the use of infrared thermography, it probably seems odd that mainstream medicine hasn't embraced this innovative technology. Most physicians have not heard of it, and those who have dismiss it, claiming thermography is inaccurate. This misconception is the result of the Breast Cancer Detection and Demonstration Project (BCDDP), the most frequently quoted reason for the decreased use of thermography. The BCDDP was a large study that ran from 1973 to 1979 and collected data from many centers in the U.S. Its goal was to evaluate physician examination, mammography and infrared thermography.

From the BCDDP's inception, there were significant flaws in the study design with respect to thermography. While the mammographic protocol was extensive and described in great detail, the entire protocol for thermography was outlined in one paragraph. The study required all mammographic centers to be trained and have expertise in mammography. The opposite was true for the thermography guidelines, where no training was required. In fact, only 5 out of 27 demonstration project centers had any expertise in infrared imaging [14].

Another substantial flaw with the BCDDP was that there was a lack of quality control in obtaining thermal images. Because infrared imaging is providing information relating to breast temperature, the environmental conditions in which the imaging is performed must be controlled. As a result, many of the thermograms included in the study were of little diagnostic value. To compound the problem further, no standardized reading protocol had yet been established for infrared interpretation. It wasn't until the early 1980s that standardized interpretation guidelines were developed.

Due to the numerous flaws in study design and quality control, the initial thermographic results were disappointing and infrared imaging was dropped from further evaluation as part of the BCDDP. Consequently, mammography was found to be a useful screening tool and became the standard-of-care in breast screening. It is unfortunate that the substantial thermography research performed in the 1980s and 1990s was never enough to overcome

the bias of hospitals and diagnostic centers who had invested in mammographic equipment; nor was it enough to convince the physicians trained to rely on mammography.

Screening Guidelines

Most thermography experts agree that the average woman should have an initial infrared scan by the age of 20; every three years between 20 and 30; and annually after the age of thirty. Women at a higher risk of breast cancer should be screened more frequently, as should women who have had breast cancer.

Conclusion

The American Cancer Society estimates that over 200,000 women will die from breast cancer this year. The average woman"s lifetime risk of getting breast cancer is 1 in 8. Currently, physical examination and mammography are the standard-of-care in breast cancer detection; however, mortality rates haven't changed appreciably in forty years. Despite this fact, research demonstrates that the earlier the detection of cancer, the better the prognosis. Research has proven that infrared breast thermography identifies cancers not detected by mammography, assists in earlier detection, and improves survival rates by up to 61%. Because thermography does not use radiation or breast compression, it will not promote breast cancer nor cause unnecessary discomfort.

Another benefit of thermographic screening is that it provides invaluable risk assessment in the absence of demonstrable cancer. Research has indicated that a woman with otherwise healthy breasts but an abnormal thermogram is at much higher risk of developing breast cancer. This knowledge affords a woman valuable time to adopt aggressive cancer preventive strategies—many of which are proven to prevent or slow cancer growth. Additionally, a woman who is at higher risk can be screened with infrared thermography more often. Because a baseline thermogram is like a fingerprint of the breast, even the slightest alteration in bloodflow can be identified and alert the administering physician that additional breast diagnostics, such as a mammogram or MRI, are advisable.

Sources

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