



Breast Thermography- A Responsible Second Look

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Breast cancer and other breast diseases have become a tremendous issue in women's health today, particularly in advanced industrialized nations. Also note that approximately 1,000 men get breast cancer yearly.

A procedure which has gone largely unnoticed is Breast Thermography, also known as Breast Thermal Imaging. Breast thermography promises the opportunity of earlier detection of breast disease than has been possible with breast self examination, physician palpation, or mammography.

The medical community investigated breast thermography quite extensively during the late 1970's and early 1980's. The FDA approved the procedure as an adjunctive tool in breast cancer screening, and many physicians, concerned about the radiation exposure of mammography, began to promote thermography as a replacement for mammography. This was error.

Basics of Thermal Imaging

Thermography is a non invasive test. This means that it sends nothing into your body. In fact, there is no contact with the body of any kind, no radiation and the procedure is painless.

Utilizing very sophisticated infra-red cameras and desk top computers, thermal imaging technicians simply capture a photograph of the breasts. An infra-red photograph, or heat picture. The data is stored in

a computer and then can either be printed on high resolution color printers, or sent electronically to a physician with a similar computer for analysis.

The physician, such as a radiologist or thermal imaging specialist, then compares the heat patterns in the left breast to the right breast. Any difference in heat, or any specific blood vessel patterns in one breast that do not appear in another indicate a physiologic abnormality. This may be pathological (a disease) or it might indicate an anatomical variant. When a thermogram is positive, the job of differential diagnosis begins.

This is all that thermal imaging, or thermography provides. A physiologic marker that some abnormality is present in the breast. Nothing more and nothing less. This is however, an extremely valuable and important finding, but it has historically been the interpretation of these findings that has been the problem, and is now the subject of the "responsible second look".

Competition Paradox with Mammography

Scientists and health care researchers have been looking for many decades at tools that can identify breast cancer reliably and quickly. It takes years for a tumor to grow, and the earliest possible indication of abnormality is needed to allow for the earliest possible treatment and intervention.

Thermography was viewed as a possible early diagnostic tool for cancer. The reason I stated that this was error, is quite obvious, but almost totally overlooked by the clinicians and researchers of the day.

Thermography is a test of PHYSIOLOGY. It does not look at anatomy or structure, and it only reads the infra-red heat radiating from the surface of the body.

Mammography, on the other hand, is a test of ANATOMY. It looks at structure. When a tumor has grown to a size that is large enough, and dense enough to block an x-ray beam, it produces an image on the x-

ray or mammographic plate, that can be detected by a trained radiologist. A fine needle biopsy is then generally performed to identify the type of tissue in the mass, to determine if atypical or cancerous cells are present.

We now come to an important point. Neither thermography nor mammography can diagnose breast cancer. They are both diagnostic tests which reveal different aspects of the disease process and allow for further exploration.

The problem has been, that a number of studies were done on patients who had an established diagnosis of breast cancer. These studies were done with thermal imaging, wherein the patient having known breast cancer acted as their own controls.

In other words, the patients cancerous breast was compared thermographically to the patients healthy breast. In nearly every case the cancerous breasts were hotter and had specific patterns of heat mimicking the appearance of blood vessels that suggested 1) cancerous tumors were hotter than surrounding tissue and 2) blood vessels in the vicinity of the tumor were engorged with blood and this produced hotter thermal images than the normal vessels in the opposite breast.

This made complete sense, until the research proceeded to look at younger, and younger women.. It was at this time thermography was viewed as a failure. In a local newspaper article in my home town paper covering my clinic, the caption read "Thermal Imaging...Useful tool or dinosaur in breast cancer detection".

Here is the problem. Early stage tumors have not grown large enough or dense (thick) enough to be seen by current mammography. When the thermogram picks up the heat from the tumor, a mammogram is performed and often the mass is not detected.

The result of the thermogram is then considered a "False Positive". The more patients of younger age screened with the so-called false positive, the more suspicion was placed on thermography.

Eventually lobbying efforts at the AMA's House of Delegates and at Medicare, brought about the removal of thermographic coverage by insurance companies, and the demise of thermography in large measure. This is most unfortunate.

Thermography was viewed as a competitive tool to mammography, a role for which it was never intended. This is a known fact in the community of board certified clinical thermographers. Thermography is complimentary to mammography and an adjunctive tool in the war on breast cancer. We must learn to accept the information these tools bring to us, and use the information to the best management of the patient. You and me.

The Correct Role for Thermal Imaging

This is where the correct utilization of thermographic imaging will demonstrate it's ability. In the correct model, thermography of the human breast can make a profound and positive impact on breast cancer and other breast disease. Here's the correct model.

Thermography is a risk marker for breast pathology. This paper is written for the general public and I am not going to burden the reader with a large base of complex studies that have been published demonstrating the clinical utility and reliability of the procedure. Suffice it to say it is overwhelming.

My purpose is to identify the role of thermography. It is actually quite a simple one.

In performing this procedure, which is non-invasive and non-compressive, we can establish a baseline in women as young as 18. Yearly thermographic evaluations as part of a routine annual physical can be performed inexpensively and quickly.

As soon a suspicious (positive) breast thermal examination is performed, the appropriate follow-up diagnostic and clinical testing can be ordered. This would includemammography and other imaging tests,

clinical laboratory procedures, nutritional and lifestyle evaluation and training in breast self examination.

With this protocol, cancer will be detected at its earliest possible occurrence, It has been estimated by a number of my colleagues that thermography is correct 8-10 years before mammography can detect a mass.

This is both exciting and frustrating for the clinician and the patient. It is exciting as it gives us the opportunity to intervene long before cancer can grab hold of the body. Cancer is opportunistic. We must find it, or the suspicious signs of its' presence long before the intervention stage has passed.

On the other hand, it is frightening to uneducated clinicians and patients, and poses quite a dilemma for those rooted in the "wait and see" attitude. It is very difficult to sit in front of a patient and tell them that you have a positive finding with a procedure that suggest the possibility of a terrible disease, and then have no other tools available to confirm or deny the tests correctness.

This is not thermography's failure. Indeed this is where the scientific and research community has failed thermal imaging.

If one can grasp the simple concept that thermography is detecting the fever of a breast pathology, whether it is cancer, fibrocystic disease, an infection or a vascular disease, then one can plan accordingly. One can lay out a careful clinical program to further diagnose and or MONITOR the patient until other standard testing becomes positive, thus allowing for the earliest possible treatment.

Two other positive benefits of breast thermal imaging have also been proposed by the author at scientific symposia. As a non-invasive low cost procedure, thermography can be made available to two distinct subpopulations:

1. Patients who are economically deprived and can not afford the cost of mammography.

2. Patients who are afraid of mammography due to fear of x-ray or breast compression, and thus do not get their recommended mammogram.

The Paradigm Shift

It is my position that the role of thermography is vastly different than it originally was determined to be. We must begin to look at this tool for what it really is. A highly accurate, high yield thermometer, much like the one every physician uses daily to determine the presence of fever.

Numerous studies have been published in the United States, England and France demonstrating that patients in the false positive thermographic group I mentioned earlier, those patients with positive thermograms and negative mammograms who were told the thermography was wrong, were determined by long term follow-up to have developed breast cancer in exactly the location thermography had demonstrated its positive finding 5-10 years earlier.

Thermography's only error is that it is too right ~ too early. It is our job as scientists, physicians and concerned patients, to identify the appropriate protocols once a thermogram is positive. It is in this capacity that the paradigm must shift.

We have a wonderful and exciting opportunity to at last change the incidence of this horrible disease, by screening younger women utilizing high resolution thermal imaging technology and then placing those women with positive findings into the appropriate lifestyle modification and treatment model which may be able to prevent or minimize not only cancer, but all breast disease.

This is our task.

