

Rethinking Breast Thermography Dogma

Despite decades of advocacy and repudiation of Breast Thermography from both sides of the fence breast thermal imaging has grown in public popularity. This same level of acceptance however has not been embraced by the medical community at large. Having had the privilege of being a member of the American Academy of Thermology's writing committee for Guidelines for Breast Thermal Imaging (1) and the President of the American Academy of Thermology, I thought it might be of interest to share some insights as to why this might be the case. Readers are asked to remember that the thoughts that follow are mine and do not represent policy of the American Academy of Thermology.

Breast Thermographers are passionate about the importance of monitoring skin temperature in order to gain insight into breast physiology. They make the decades' old argument that structure and physiology are not the same thing and that relying solely on anatomical imaging studies for diagnosis is therefore inherently flawed. Breast mammographers and others who do not look beyond structure are by definition biased, and their scope and breadth of assessment of breast disease is more narrow than those that also care about physiology. Mammographers, and many others in medicine, likewise view breast thermographers with disdain. They argue with similar voracity that to replace structural evaluation with physiologic assessment is blasphemy; it is simply irresponsible and has no place in medical breast imaging and diagnosis.

Similar debates have occurred in medicine in the past. For example Physiatrists in training are frequently reminded that it took 40 years until surgeons accepted physiologic nerve root irritation on EMG in the absence of structural injury on myelogram, CAT Scan or MRI (2). Perhaps a more germane comparison might be made with musculoskeletal thermographers who for years maintained that skin temperature asymmetries that tracked in the distribution of a nerve root represented nerve root irritation. Numerous articles were published correlating those findings with other mainstream imaging studies in order to make their point. These arguments were largely debunked by mainstream medicine however. Despite this history today one rarely, if ever, hears about disagreement over the value of musculoskeletal thermal imaging in sympathetically mediated pain syndromes or for a whole host of other conditions. The reader is referred to the American Academy of Thermology's Guidelines for Neuromusculoskeletal Thermography (3).

So how is it that Neuromusculoskeletal thermography has gained acceptance for so many conditions but Breast thermography has not gained it for even one? I believe the answer is simple. Neuromuscular thermologists have broadened their scope of view so as to have a better understanding of what the critiques were and then changed their nomenclature to conform with the broader medical community. Thermal changes in an L5 distribution no longer means there is a L5 nerve root irritation but now rather means that any structure that can produce findings in an L5 distribution may be the generator. While vasomotor instability and skin temperature are largely under the influence of the sympathetic system, there is recognition that vascular disease, inflammation, coagulopathies, lymphatic disorders, and other systemic factors can impact study findings. Neuromusculoskeletal thermographers have accepted that in order to be an interpreting thermologist one must take into consideration all factors that can

influence study results. They have also learned to make clear distinctions between thermal findings, thermal impressions, and clinical impressions (4).

In a word, as a group, breast thermologists to date have not yet made similar changes. Old dogma and nomenclature are still held onto tightly; the concept of addressing findings in a fashion that is consistent with conventionally defined nomenclature (5) has not been embraced and breast thermologists have not demonstrated a willingness to think of breast thermography as a breast risk indicator that can be impacted by many things beyond breast tissue or hormone imbalance. While the reasons for this unwillingness to change are many and complex, it is not because there is no safe, common ground that they could use that would allow them to thrive. Just like the mammographer who refuses to think beyond structure has limited ability to see the whole picture, the breast thermographer who does not accept the need for something greater than minimal views, cold stress tests to evaluate musculoskeletal and autonomic impacts, or in depth medical training in order to have a full understanding of potential mediators of thermal imaging findings is also limited (6, 7).

The number of examples are too numerous to list but I will try to illustrate just a few.

A 45 year old female gets a breast thermography study done and findings show the right breast is globally warm, with more pronounced changes proximally and in the breast tail. Only oblique and anterior views were obtained. This is commonly read today as a high risk study using Thermobiological (TH) criteria. However this patient in fact suffered from subclavian steal. At no cost to the patient and with little or no extra time lateral limb views would have revealed an entirely different picture. Cold stress study may very well have impacted interpretation as well (a cooling vaso-constrictive response should at least raise an index of suspicion for autonomic, neuromuscular or vascular involvement).

A 54 year old female presents for a breast thermographic study. Findings include hypothermia in the left breast at 3PM. There is also symmetric hyper vascularity. Hypothermic regions are frequently not read by breast thermologists and if documented, they are often attributed to fibrocystic disease (not withstanding that cystic disease of any kind may be hot, cold, or neutral in temperature). Posterior views were not taken and cold stress studies were not performed. Consideration was never given to sympathetically induced thoracic intercostal neuritis, facet related pathology, or neuropathy. The additional cost for the posterior view is nothing. While a cold stress study may add minutes to the time required to do the study, posterior views would add seconds at best.

An experienced breast thermologist who routinely only takes anterior and oblique views is called by a local radiologist to confer over thermal findings. The radiologist is concerned about a possible mass in the outer ring at 9 pm. While the thermologist did not refer the patient for radiology services he makes the call anyway since he is trying to get approval from the patient's insurance carrier for further testing and as such he has to meet certain defined criteria. The radiologist asks why lateral views were not taken and how is it possible for thermal imaging to see around radial edges. The breast thermologist is in a difficult position and cannot effectively answer the radiologist's questions. Credibility is lost. This situation could easily have been avoided if lateral views were taken. The additional cost would have been nothing.

A well trained technician approaches an experienced breast thermologist who is looking for a technician to do studies for her. The technician believes in doing full studies with multiple views including cold stress studies. She offers to tailor her studies to the thermologist's needs but encourages her to consider more than minimal views and to include cold stress studies. The breast thermologist is closed to changing dogma and cites literature a decade old. The thermologist tells the technician she will find someone else who only does limited studies.

The FDA sends out advisory notices to cease and desist using marketing materials that suggests breast thermography is a stand-alone test for breast cancer or that it replaces mammography and other structural tests (8). The technician and thermologist do not change their marketing practices in a meaningful way.

A 39 year old female comes in for annual breast thermographic examination. Leopard like spots are seen on grey scale diffusely in the breast and torso. The thermologist reports estrogen dominance as a thermographic finding and suggests hormone replacement therapy in the thermographic impression. Estrogen dominance is not a finding nor does it describe what was seen (estrogen dominance is a clinical impression; leopard like spots in a diffuse, widespread distribution including the torso are findings). No consideration for other generators such as elevated venous pressure or histaminic inflammatory response is given. The patient is later found to have elevated liver enzymes, cholelithiasis, and portal congestion.

While each of these vignettes has been edited for the purposes of this discussion, they are real examples of what occurs in the field. It is time for breast thermologists to rethink their dogma so that discussion can focus on the important issues. Breast Thermography is a breast risk health assessment, not unlike an elevated blood pressure reading that may indicate risk for stroke or heart attack. Breast Mammography is an imaging test that looks for signs of abnormal structure associated with things like cancer. They are simply not the same thing.

In some cases Mammography has a harder time seeing breast tissue changes. Examples include women with small, dense, fibrocystic breasts or those who have had a mastectomy or implants. In these cases Thermography is an especially valuable adjunct. Since it is a test of skin temperature and physiology Breast Thermography also has the advantage of being able to look at estrogen imbalance, lymphatic congestion, and surface vascularity. In yet other cases women simply want to be as proactive as possible and prefer to get both Breast Thermography and Mammography done in order to have an even more thorough examination done versus what Mammography alone might offer. When considering the merits of any structural or functionally oriented test to make sense to use both wisely. For those who are looking for something beyond Mammography choosing both Breast Thermography and Mammography can make sense too.

Breast thermologists can enjoy greater acceptance of this important modality by differentiating thermographic findings, thermographic impressions, and clinical impressions in their reporting, by gaining expertise in other medical pathologies that may produce physiologic responses in the breast, and by adopting nomenclature and protocols that are more acceptable to the broader medical

community. These changes can easily be accomplished without sacrificing core beliefs and with little or no expense. The only thing that is required is desire.

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