

## Breast Thermography Case Studies –

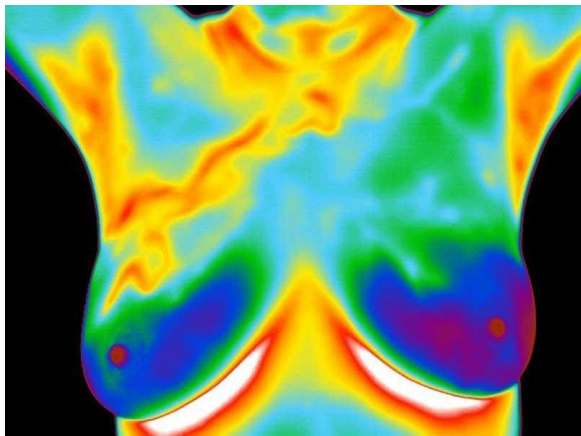
The following case studies are provided by Dr. William Amalu, DC, DABCT, FIACT – PCRC infrared imaging center.

Just as with many other healthcare examination procedures, all of the cases below were followed up with further tests in order to arrive at a final diagnosis.

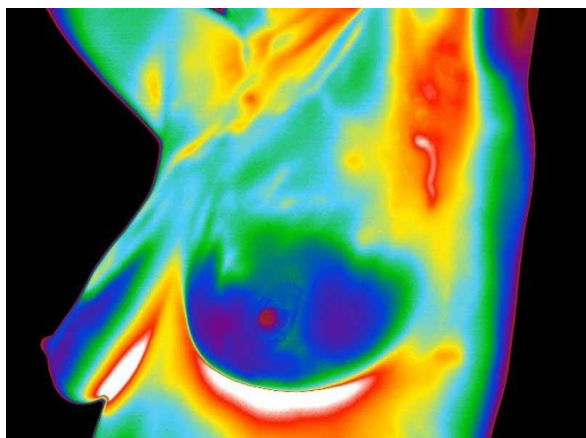
The cases that follow clearly demonstrate how thermography plays a major role as a breast cancer risk assessment marker.

### Case Study #1

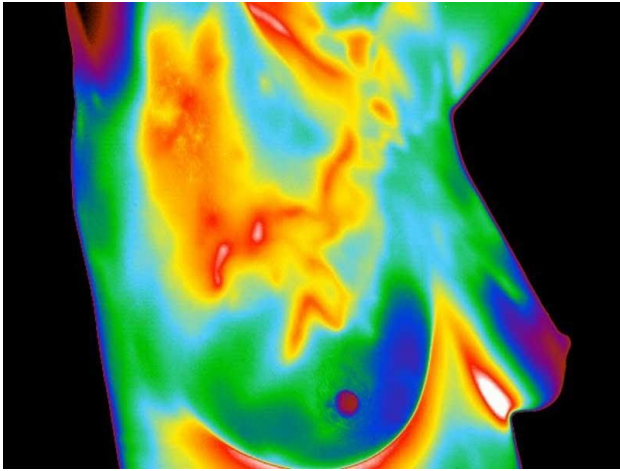
This patient presented with a lump in the right breast. Her doctor sent her in for a follow-up mammogram to investigate the lump. The mammogram came back normal with a recommendation for a routine annual exam.



**The image to the left** shows a hot vascular pattern (angiogenesis) projecting into the area of the lump in the upper outer quadrant of the right breast.



**In this image**, the left breast is shown to be cool with a normal limited vascular pattern.



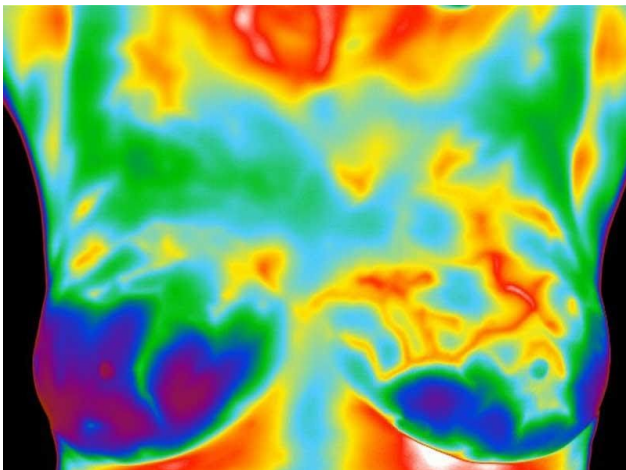
**This image** shows the right breast with the area of the lump directly facing the infrared detector. The increased heat and vascularity are very noticeable especially when compared to the left breast.

The patient was sent back to her doctor with a recommendation for further testing.

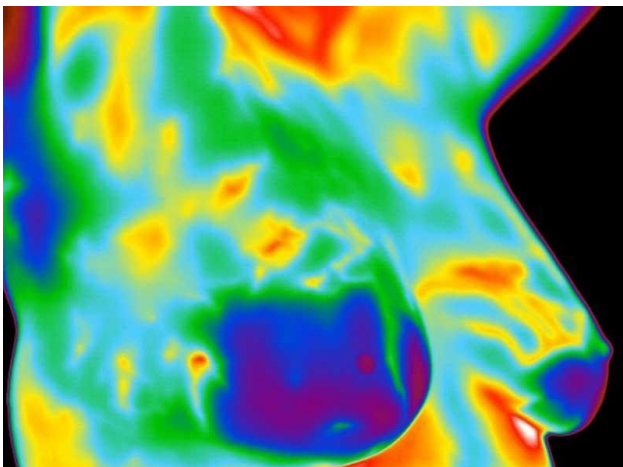
A biopsy confirmed that the lump was cancer.

### Case Study #2

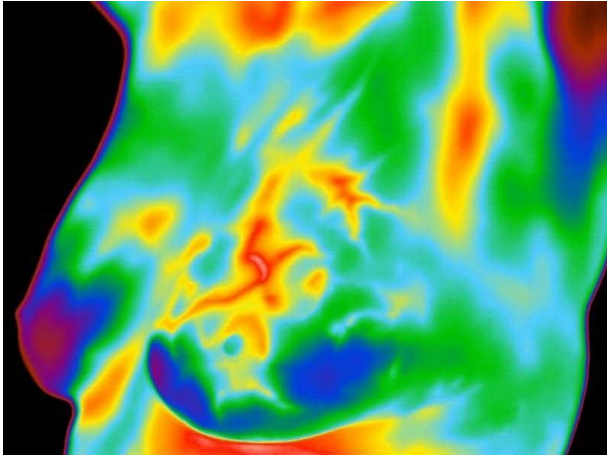
This patient had a recent mammogram that was considered watchful for an area in the left breast. A follow-up ultrasound of the left breast was also watchful for the same area. The report recommended a follow-up mammogram in 6 months to monitor the finding in the left breast.



**The image to the left** shows a noticeable increase in heat and blood vessel activity (angiogenesis) in the left breast when compared to the right.



**This image** of the right breast shows a normal cool thermal signal and vascular pattern.



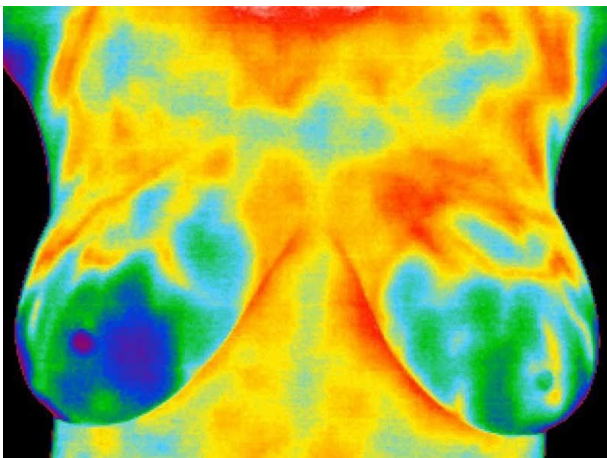
**In this image**, the left breast is viewed showing the extent of the hot engorged blood vessels extending across the breast.

The patient was sent back to her doctor with a recommendation for further testing with a focus on the watchful area in the left breast.

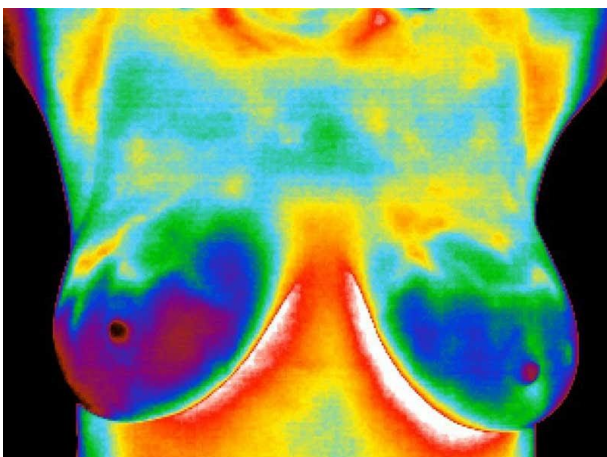
A biopsy came back positive for cancer.

### Case Study #3

#### Estrogen Dominance



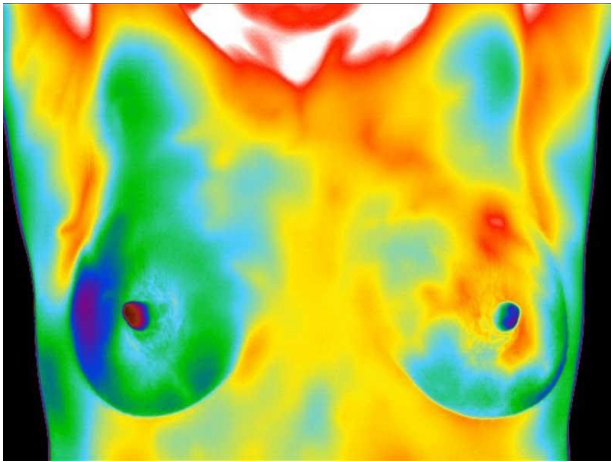
This patient presented with pain and tenderness in both breasts. The image to the left shows a display of large hot blood vessels extending across the upper half of both breasts (You may also notice that there is more going on in the left breast, but for now we will focus on these other findings.). This thermovascular display is commonly seen in patients with a suspected estrogen dominant state of the breasts. Since the greatest single risk factor for the development of breast cancer is lifetime exposure to estrogen, this finding may be very important in the prevention of breast cancer. In order to confirm the condition, the patient was referred to her doctor for an examination and further testing. Her follow-up exam and testing confirmed the estrogen dominance.



After undergoing treatment, the image to the left shows a significant decrease in blood vessels, blood vessel size, and heat across the breasts. You may also notice the overall improvement in the left breast. The patient's left breast was a TH4 (abnormal) in the upper image and is now a TH3 (questionable). The patient underwent specific treatment for her estrogen dominance and separate treatment for her TH4 breast. Her images show significant improvement with near normalization of the hormone balance in her breasts. Her previous symptoms of pain and tenderness had also resolved. Thermography was able to warn this patient of her increased risk for breast cancer due to the estrogen dominance. With this information in-hand she was able to get the treatment she needed to lower her risk for future breast cancer.

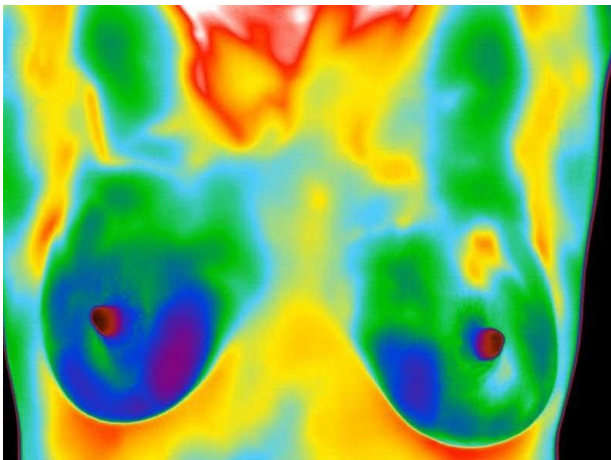
#### Case Study #4

This case demonstrates how angiogenesis is involved in malignant tumor growth and how infrared imaging detects this process.



**The image to the left** shows a significant amount of heat and blood vessels in the left breast. The right breast is cool and normal in comparison.

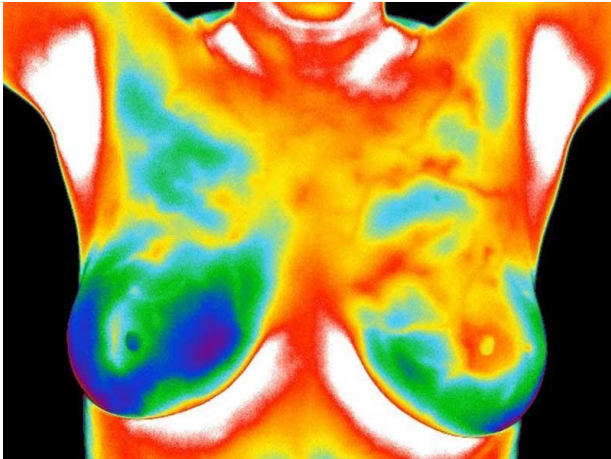
The patient was sent back to her doctor for immediate further imaging. The combined findings on the thermogram and structural imaging prompted her doctor to order a biopsy. The biopsy was positive for a very early stage cancer.



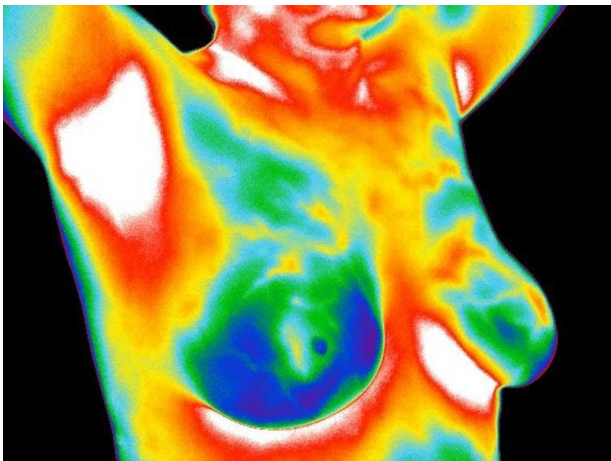
**This image** was taken three months after the patient's lumpectomy. Note how the left breast has returned to a near normal cool state. The blood vessels seen in the previous image have almost vanished. Since the cancer has been removed, there is no longer a demand for an increased blood supply to maintain the continued growth of the tumor.

## Case Study #5

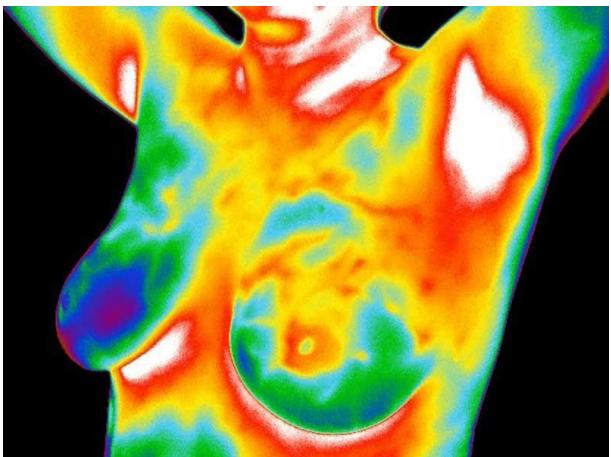
This patient had normal mammogram and a watchful ultrasound of the left breast. The report recommended follow-up imaging in 6 months. Her doctor was concerned over a thickening in the left breast.



**The image to the left** shows a significant increase in temperature of the entire left breast along with noticeable vascularity (angiogenesis).



**In this image**, the right breast is seen to be normal and cool without evidence of abnormal vascular patterning.



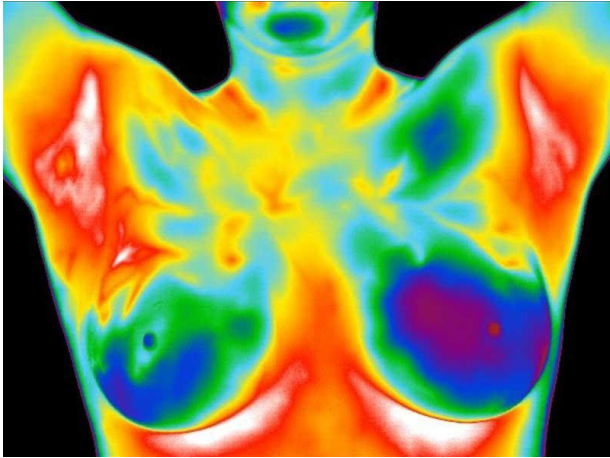
**This image** shows the extent of thermovascular activity across the left breast.

The patient was referred to her doctor with the recommendation for further testing.

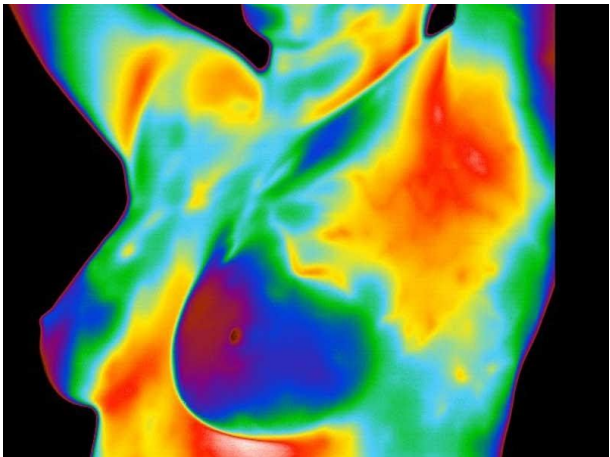
The biopsy results were positive for cancer.

## Case Study #6

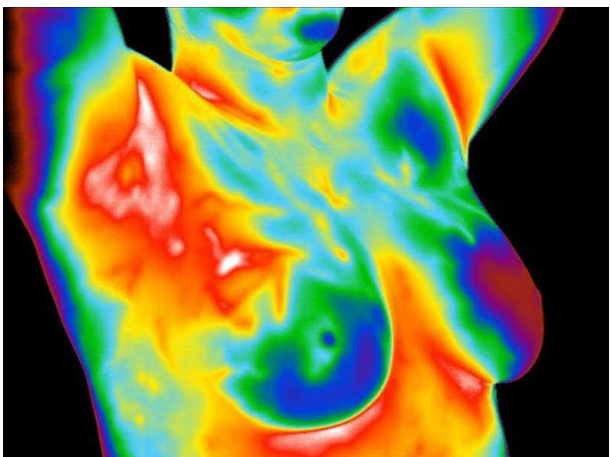
This case study involves a 22-year-old woman who discovered a lump in her right breast. Her doctor examined the area and noted that it was likely a cyst. The patient was concerned and asked for further testing. A mammogram was performed with normal findings. Her doctor assured her that everything was fine and that she was too young to have breast cancer.



**The image to the left** shows an increase in temperature and vascularity (angiogenesis) in the right breast.



**In this image**, the left breast is cool and without a suspicious vascular pattern.



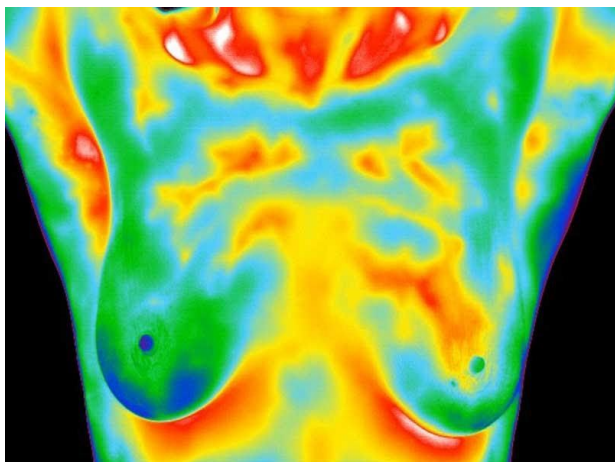
**This image** of the right breast shows a group of hot blood vessels over the area of the lump.

The patient was referred to her doctor for further testing.

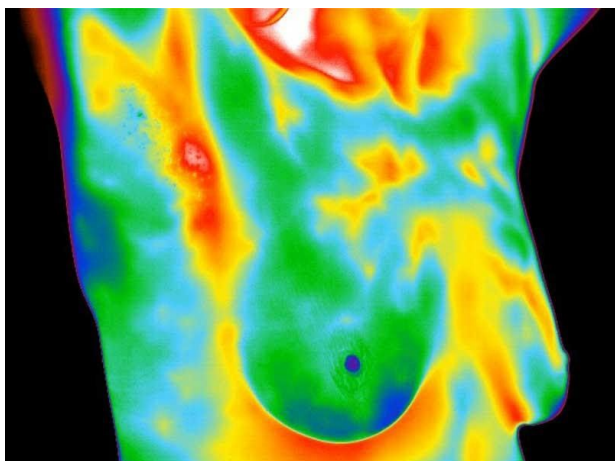
A biopsy confirmed that the lump was a very early stage cancer.

## Case Study #7

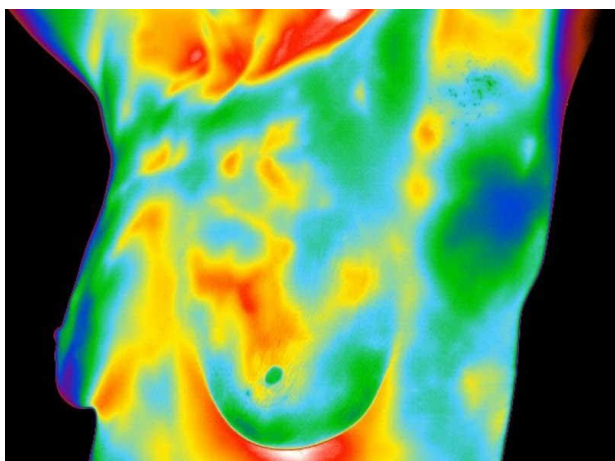
This 41-year-old woman presented with a complaint of pain in the left breast. Her last physical examination and mammogram one year earlier were normal.



**The image to the left** shows a increase in temperature and vascularity (angiogenesis) in the left breast.



**In this image**, the right breast is relatively cool and with no suspicious vascular patterns.



**This image** of the left breast shows the extent of the heat on the left side of the breast.

The patient was referred to her doctor for immediate follow-up imaging.

The follow-up structural imaging detected a suspicious area in the left breast. A follow-up biopsy confirmed it was cancer.