Clinical Applications of Medical Thermography

Alexander Mostovoy, HD, DHMS, BCCT
Thermography Clinic Inc.

ABSTRACT

Infrared thermography as a medical screening tool is gaining popularity and acceptance and has been proven to be valuable in the early detection of breast disease. However, the clinical applications of infrared thermography in the prevention of breast disease and in full body examinations have yet to be fully realized. Infrared thermography can identify thermal irregularities at a very early stage, cost effectively, and with no harm to the patient.

INTRODUCTION

At our clinical thermography clinic in Toronto, we have imaged thousands of patients using standardized imaging and qualitative TH reporting methods. Over the years, certain risk factors relating to breast cancer have been seen. For example, our findings show that a very high percentage of women presenting with a history of breast mastectomy due to breast cancer have suggestive same-sided dental pathologies.
In many instances hypothyroidism precedes other chronic conditions such as cancer or fibromyalgia.
Many other conditions can be confirmed and diagnosed in their earlier stages of progression providing patients and their health care providers with an early warning system that is safe and cost effective.

MEDICAL EXAMPLES OF IR THERMOGRAPHY

Thermal Imaging is used in medical applications in the following ways:

- Risk Assessment
- Adjunctive Diagnostic Information
- Treatment Monitoring
- Prognostic Indicator

The following brief case studies give some examples of these uses.

Figure 1 gives an example thermogram of a patient's face showing warming of the supraorbital artery indicating elevated blood pressure and vascular headaches. Also in Fig. 1 the paranasal warming indicates mild sinus irritation perhaps due to an allergic reaction.

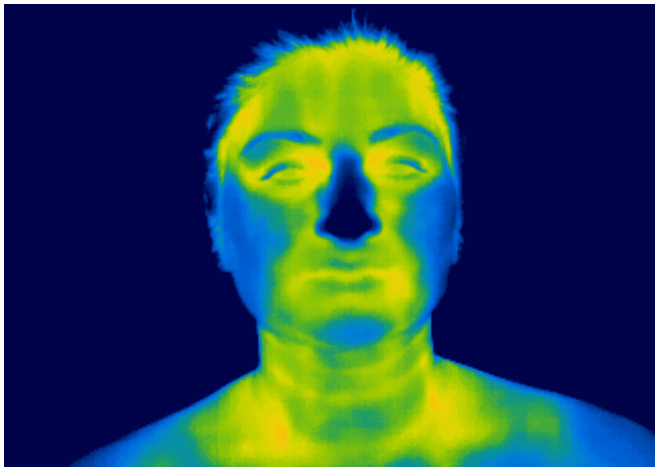

Figure 1.Supraorbital artery and paranasal warming can be problem indicators.

Figure 2 shows excessive cooling on the anterior neck of this patient indicating decreased thyroid function. Figure 3 supports the initial indications of Fig. 2 with the relative warming of the hands compared to the forearms that could indicate alterations in metabolism offering a secondary finding toward decreased thyroid function.

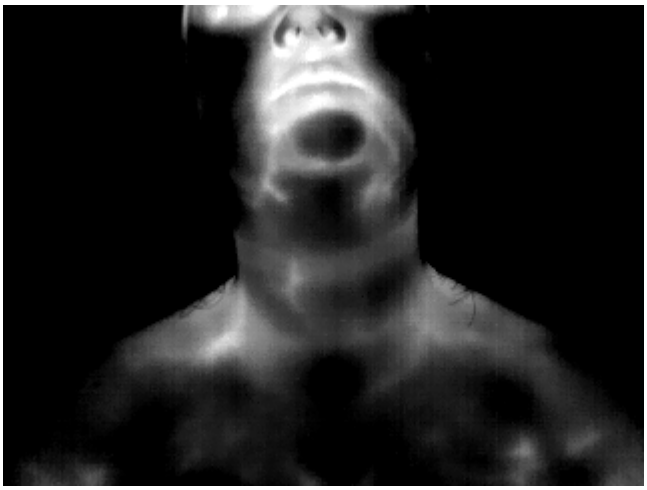

Figure 2. Anterior neck cooling indicating decreased thyroid function.

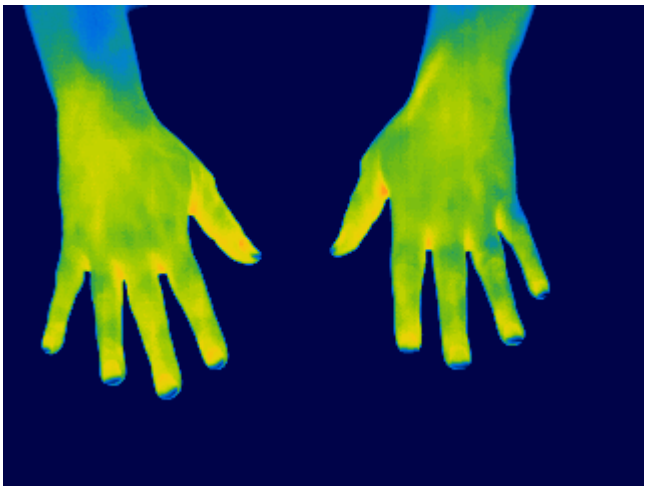

Figure 3. Hands warmer than forearm tend to support decreased thyroid function by indicating metabolic alteration.

Figures 4 and 5 give IR images of two patient's backs. Figure 4 shows elevated temperatures, vascular markings, on the back indicating vascular changes from the kidney tumour. Figure 5 shows warm spots over the rhomboids, trigger points for fibromyalgia.

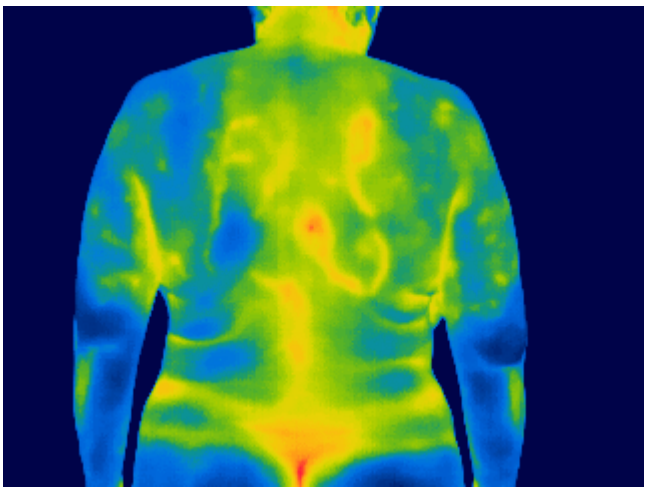

Figure 4. Vascular markings (warm) on the back.

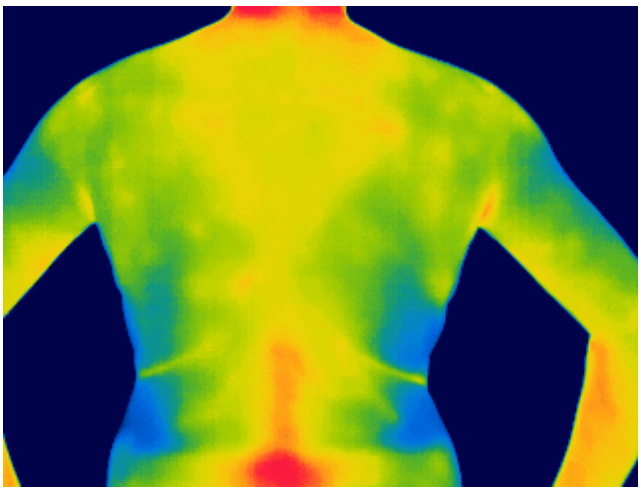

Figure 5. Hot spots over the rhomboids

Figures 6 and 7 give more IR images of the back. Sacral hot spots in Figs. 6 and 7 indicate inflammation and may be reflect secondary reflexes from bladder cancer. The hot spot in the region of the mole on patient in Figure 6 suggests possible inflammation or increased metabolism and increased risk for malignancy.

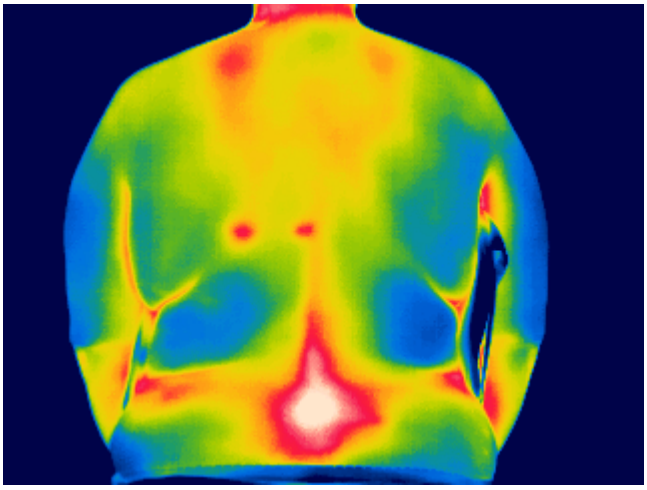

Figure 6. IR image shows sacral hot spot plus warming of a mole area.

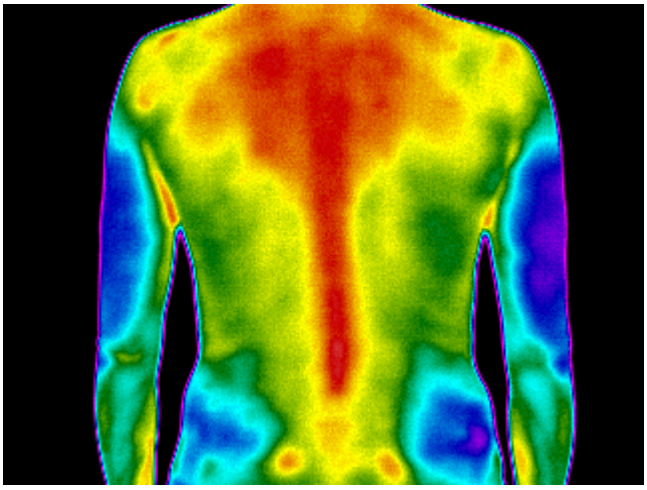

Figure 7. IR image shows warming of the sacral area.

Angiogenesis and Breast Cancer

- Breast cancer requires greater blood flow for growth.
- From inception, transplanted cancer cells acquired the ability to secrete chemicals which induce vasodilation and angiogenesis.
- Angiogenesis is more intense in the early stages.
- Detecting signs of angiogenesis can aid in the early detection of breast cancer.

Figure 8 gives and example breast thermography image where the patient felt a lump in her right breast at 8-9 O'clock. The IR image shows a warm area in the same location. No other tests or reports were available at the time of this evaluation. There was a strong family history of breast cancer. The patient was referred for structural testing, later confirmed positive.

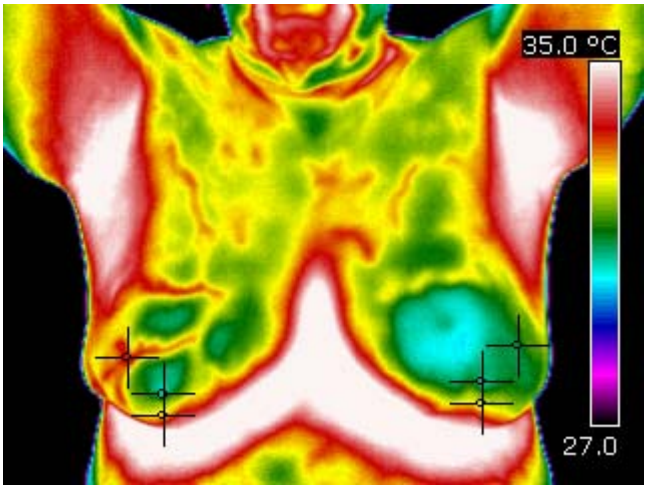

Figure 8. Warm area of right breast same location as lump felt by patient.

Figure 9 a and b show IR images of a patient with a right side mastectomy (9b) and associated dental pathology (9a). Invariably with most post-mastectomized women there is a coincidence of same sided dental pathology. This relationship requires further research and study.

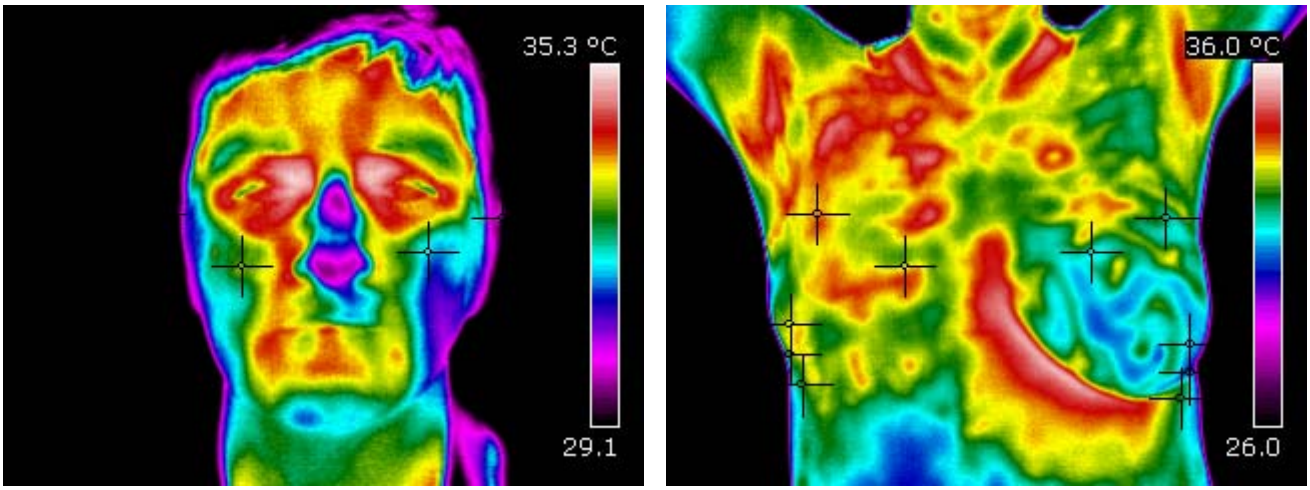

Figure 9 a and b. IR image left (a) indicates right side dental pathology associated with right side mastectomy shown in IR image on right (b).

Treatment Monitoring

- Evaluate chemotherapy
- Pre and post surgical images
- Evaluate chemotherapy
- Evaluate chemoprevention therapy
- Evaluate the effects of lifestyle intervention

Figure 10 a and b show IR images of a patient who underwent I3C therapy. Fig. 10a shows initial IR image. Fig. 10b shows IR image after 6 months of therapy.

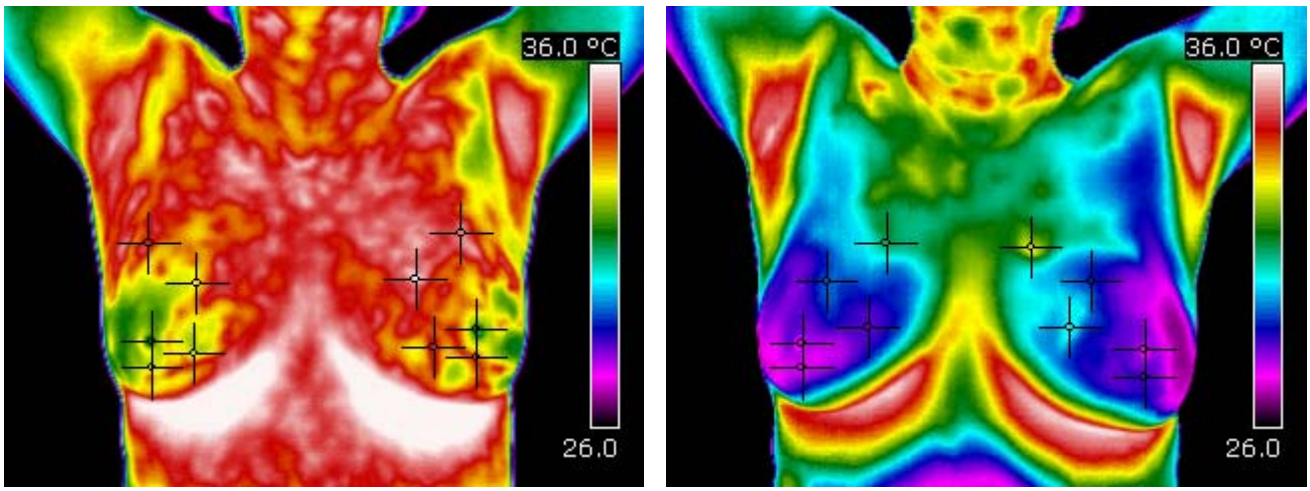

Figure 10 a and b. IR image on left (a) shows initial condition prior to treatment. IR image on right (b) shows 6 months later with I3C therapy.

SUMMARY

Infrared images are able to identify connections and causes of pain and disease at a very early stage. First-Line imaging modality must be safe, convenient and able to detect primarily the more aggressive tumors when early intervention can have the greater impact on survival. IR thermography is safe and non-invasive technique to quantify vascular and metabolic changes related to early tumor genesis. Integrating Thermography into a multi-imaging approach can increase the sensitivity and provide an early warning signal of an abnormality.

REFERENCES

Anbar, M. Hyperthermia of the cancerous breast: analysis of mechanism. Cancer Lett. 84, 1994
Dodd, G.D., Thermography in breast cancer diagnosis. In Proceedings of the 7th National Cancer Conference. Los Angeles, CA. Sept 27-29 Lippincott, Philadelphia, Toronto, 1972
Elliot R. Head, J. The Important Role of Infrared Imaging in Breast Cancer. IEEE Engineering of Medicine and Biology. May June 2000
Gautherie M. and Gros C.M. Breast thermography and cancer risk prediction. Cancer, 1980

ABOUT THE AUTHOR

Dr. Mostovoy is a Doctor of Homeopathic Medicine and Science, and a Board Certified Clinical Thermographer specializing in Women's Health at his clinic in Toronto, Canada. He is a Board Certified Clinical Thermographer with the American Medical Infrared Academy (AMIA), and the Association of Clinical Thermographers, and is a graduate of the Homeopathic College of Canada. He has extensive experience in educating physicians and patients on Medical Infrared Thermography, has been featured on numerous television and radio shows, and is a frequent speaker at medical conferences. Dr. Mostovoy co-developed an infrared medical imaging application and provides turn-key business solutions to those wishing to get into medical infrared imaging. Thermography Clinic Inc. provides over 20 imaging clinics around the world with training and IR imaging reporting services.