

News in Thermology

Thermal imaging and Sleep Medicine

Dr. Govindan, executive director of the American Academy of Thermology (AAT), promoted temperature measurements from infrared thermal images as an investigative technique for diagnosing sleep disorders. He presented a poster at the 26th Annual Conference on Sleep Disorders in Infancy and Childhood, held on January 17-19, 2008 at the Annenberg Center for Health Sciences in Rancho Mirage, California. See the abstract of Dr Govindan below (reprinted with permission of Annenberg Center for Health Sciences at Eisenhower)

FOREHEAD NOSE TEMPERATURE RATIO IN EXCESSIVE DAYTIME SLEEPINESS/ NARCOLEPSY.

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Objective: Altered skin-temperature regulation in narcolepsy relates to sleep propensity. Forehead temperature is a reliable index in calculating ratio's for altered skin-temperature regulation in sleep medicine. Forehead Nose Temperature Ratio (FNTR), representing the internal and external carotid angiosomes under the regional control of trigeminovascular system was imaged using committee for the protection of human subjects approved protocol before and after treatment and correlated with clinical response.

Study Design: The study was done at Wheeling Hospital. Three Caucasian females with EDSS, ages 51-67, all had normal AHI and SaO₂ in PSG, and elevated Epworth Sleepiness Scale, MSLT abnormal in two and HLADQ 6 positive in two.

Committee for the Protection of human subjects approved methodology was used in a temperature and humidity controlled and draft free laboratory to monitor facial temperature using infrared technology. Thermograms were done at baseline and following vasomotor challenge with induced hyperoxia (100% Oxygen inhalation for 5 minutes) before and after the drug Modafinil (Provigil™), Addrell™ (Dextro Amphetamine/ Amphetamine) and Ritalin™ (Methyphenidate).

Results: Normal FNTR, Nose is colder. Normal vasomotor response to hyperoxia is vasoconstriction. Forehead Nose Temperature Ratio was calculated at baseline and following vasomotor or drug challenge. 0.5° C or more change in temperature was significant. Clinical improvement after the drug was correlated with change in vasomotor response and in Forehead Nose Temperature Ratio.

Conclusion: Thermography of Cranial Angiosomes to monitor changes in facial skin temperature regulation in the microcirculation in patients with EDSS using FNTR correlated with clinical response. Hyperoxia stress results correlate with possible role of oxygen radicals in EDSS pathophysiology. This has potential as an out patient office moni-

toring methodology for circadian stabilization of thermoregulation.

References

1. Fronczek R. Sleep: 29; 11, 1444-1449
2. Govindan S. Thermology international 2005; 15/3: 116.
3. Govindan S. Biomedl Thermol 1999; 19 (1): 38.
4. Govindan S. Thermology international 2003; 13/3: 91-98

Thermography thesis successfully defended

The Department of Medical Physiology at the University of Tromsø continuously extends its expertise in thermal imaging. Recently, Ashild Odden Miland defended successfully her thesis entitled "Dynamic Infrared Thermography on the assessment of skin perfusion". After examination by distinguished experts from UK and USA, she was awarded with the degree of Doctor Scientiarum.

During the last 8 years the Department of Medical Physiology became a major player in thermal imaging in Europe and is now the most important center for medical thermal imaging in Scandinavia. Head of the department and driving engine of thermographic research is Prof James Mercer. His web-site (www.medical-thermography.com) demonstrates very nicely the thermographic achievements made in recent years. Particularly the research in tissue viability by using thermal imaging for the assessment of the flap perfusion is an important contribution to quality assurance in plastic surgery. The information, provided by a thermal imager on the perfusion in manipulated tissues can help to reduce failures in flap surgery and increase in this way the health condition of surgical patients.

References

1. Odden Miland A. Dynamic Infrared Thermography in the assessment of skin perfusion- a clinical and experimental study. Dissertation for the degree of Doctor Scientiarum. University of Tromsø, Faculty of Medicine, Department of Medical Physiology, March 2008
2. De Weerd, L, Mercer, J.B. and Bøe Setså, L. (2006). Dynamic infrared thermography, a novel method for monitoring free DIEP flap perfusion intraoperatively. Annals of Plastic Surgery. 57(3); 279-284.

Establishment of a Scandinavian Society for Medical Thermography

On Professor Mercer's website the following call for the establishment of a Scandinavian Society of Medical Thermology is available.

This is a message to all Scandinavian based colleagues working in the field of Medical Thermography who think that it would be a good idea to establish a Scandinavian Society dedicated to this field. As far as I am aware none of the Scandinavian countries have their own National Societies

in Medical Thermography. While it sounds attractive to establish National Societies I feel that there are simply too few of us working in this field in each of the Scandinavian countries to make National Societies viable and for this simple reason it would be more sensible to establish a Scandinavian Society.

If you are interested in joining and/or assisting in organising such a Society then please let me know.

An obvious starting point is to try and form a list of people using this technology in Scandinavia that could be circulated to all concerned. I am prepared to co-ordinate the groundwork and eventually organize an inaugural meeting in Tromsø, Norway (I am also open to suggestions for other venues).

Please spread the word to any friends or colleagues that you think may also be interested.

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