

News in Thermology

Thermography Meeting at NYU

On Saturday May 3, 2008, a conference entitled "CRPS/RSD: Diagnostic/Technical Advances and Understanding Autonomic Function" was held at NYU Medical Center.

This meeting resulted from the combined efforts of faculty from NYU Medical Center and the American Academy of Thermology. Dr. Jeffrey Cohen from the Rusk Institute of Rehabilitation Medicine, NYU Medical Center, was the Course Director. This course was offered 6 AMA PRA Category I CME Credits and was offered by the Post-Graduate Medical School of New York University School of Medicine. The course was supported by independent medical education grants from Endo Pharmaceuticals, Inc and Pfizer, Inc.

The conference audience was welcomed by NYU Dr. Cohen and AAT President Dr. Hoekstra. Dr. Hoekstra introduced Dr. Robert G Schwartz, Vice President. The NYU/AAT 2008 Meeting abstracts were published in Vol 2 of Thermology international 2008.

Summary of presentations

Dr. Mathew H. M. Lee MD, FACP presented the Power, Beauty and Vision of thermography. His presentation included applications in Pre-Post acupuncture, Transfer of heat, Thermal patterns of human body, Applications in sport injuries.

Dr. Jeffrey Cohen reviewed history of thermography from ancient Egyptians (29th century BC) to military 1940s and to the present knowledge and applications and included, equipment contact/ computerized infra red imaging and areas of research in myofascial pain syndrome, complex regional pain syndrome, hyperhidrosis, repetitive strain injury, osteoarthritis, vasospastic diseases/Raynaud's phenomenon, peripheral nerve injuries and neuropathic ulceration/ Charcot's arthropathy. Also application in clinical cases were discussed.

Dr. Robert G. Schwartz presented "We Help What Hurts" and covered areas of current clinical applications, skin temperature measurement, thermography & medical research, AAT: statement of need, AAT: guidelines: indications, regulation of skin temperature, skin temperature physiology, equilibration, controlled conditions, heat emission asymmetry patterns, CRPS diagnostic criteria, thoracic outlet syndrome, cervical plexus & stellate ganglion block, vasomotor mapping and differential diagnosis.

Dr. Srinivasa Govindan presentation was on "Thermography in migraine headaches and trigeminal neuralgia". It included anatomy, functional/ physiological, angiosomes, referred pain and trigeminal neurovascular control, thermo-

graphy and extracranial bloodflow criteria for trigeminal / facial blood flow imaging, extracranial vascular receptors, pathophysiology, protocol for migraine and facial neuralgia, clinical cases with imaging drug effect and future clinical/ research applications.

Drs. Bryan J. O'Young discussed "The Role of Thermography in the Diagnosis and Management of Complex Regional Pain Syndrome".

Dr. Timothy D. Conwell from Colorado Infrared Imaging Center presented "The Role of Cold-Water Autonomic Functional Stress Testing in Evaluating Patients with Presumptive CRPS-1". The presentation included functional cold water autonomic stress testing: rationale, benefits in CRPS evaluation, physiological concepts, protocols and included case studies. Discussion was also done on somato-autonomic reflex test, evaluating the integrity of the sympathetic vasoconstrictor reflex, autonomic nervous system, evoked C-fiber impulses, sensitivity/ specificity, mimics of CRPS and references.

Dr. Ram Purohit discussed veterinary applications, monitoring treatment /prognosis, published Veterinary Thermography protocols and guidelines. Future research and clinical applications were shared with audience participation from veterinary thermographers from New York.

Dr. Philip Hoekstra, President of AAT introduced "Practical Logistics of Clinical Thermology". His presentation included physics, rationale, practical imperative, skin temperatures in neurological disorders, practical methodology, applied methodology, case studies, different infrared cameras and their capabilities.

The international invited speaker Dr. Marcos Leal Briochi had a detailed account of his research "Advancements in medical IR high sensitivity applications: fusion IR Imaging and 3D IR-MRI/TC software". The presentation included clinical thermology, coronary and cardiac perfusion intra-operative thermal analysis, from 1950 anatomical exams to 1980 functional exams, radiological IR interpretation, similarity grading criteria, symmetry, dermatomal/ radicular and non-radicular, fibromyalgia, radiogenicity, thermal texture, position and fusion image new IR software tools, IR radiology report and 3D visualization.

The meeting was well attended and received. The audience included physicians (MD, DO, DC), representing Physical Medicine, Neurology, Internal Medicine/Family Practice, Veterinary Medicine and Technologists and allied health professionals who have an interest in the diagnosis and management of Chronic Pain.

Discussions about future meeting sites in 2009 (Cleveland Clinic, Duke University Medical Center) were initiated.

Dennis McCabe, Scientific Segment Engineer, FLIR Systems, Inc had latest IR camera for demonstration and to discuss hardware and software with attendees.

Technology Examination and Certification

Janet Vics Infrared Technologist from Schenectady, NY who completed Dr. Jim Waldsmith's course in the West Coast passed the written and presented clinical veterinary cases to the satisfaction of the Examining Board and was accepted as a Certified Veterinary Thermography Technologist.

Thermal Imaging in Sleep Medicine

As reported in the newsletter section of the previous issue of this journal, Dr Sridhar Govindan, executive Director of the American Academy of Thermology, is active in raising awareness of thermal imaging in Sleep Medicine. The following paper was presented by Sridhar at the Conference of the American Sleep Society 2008 held in Baltimore, Maryland, from June 7-11, 2008 (reprint with permission of the American Sleep Medicine, first published in the journal SLEEP. Imaging Cranial Angiosomes in Hypersomnia. Govindan S. SLEEP. Volume 31, Abstract Supplement 2008: A219.)

Imaging Cranial Angiosomes In Hypersomnia

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Introduction: Thermography can monitor skin temperature regulation in the cranial angiosomes. Normal Forehead Nose Temperature Ratio (FNTR), nose is colder by 6-8 degrees C compared to the forehead. Stabilization of FNTR following treatment in hypersomnia, relating to changes in the arteriovenous shunting between the internal and external carotid angiosomes, under trigeminal vasomotor control and hypothalamic regulation was imaged.

Methods: Infrared imaging (with FLIR A 40 Camera) of facial temperature was done in a temperature and humidity controlled draft free laboratory using committee for the protection of human subjects approved protocol (induced hyperoxia five minutes 100% oxygen inhalation) and drug challenge with Modafinil (Provigil TM) in four, Dextro-Amphetamine/Amphetamine (Adderall TM) in two and Methyphenidate (Ritalin TM) in one. Thermograms done at baseline, for 20 minutes after hyperoxia and 1-2 hours after the drug. Normal response to hyperoxia is vasoconstriction. Altered response can be decreased/ absence of response or paradoxical vasodilatation. Seven Caucasians, six females, one male, 51-67 yrs, with hypersomnia evaluated by sleep medicine/ clinical neurological exam, lab testing and PSG/ MSLT. Their Epworth Sleepiness Scale 11 to 20. HLA DQ tested in 7, positive in 4. MSLT sleep onset latency mean 6.9 minutes. One patient had two SOREMS. AHI normal in six. Seventh patient AHI 6.9. She lost 35 pounds before thermography testing

Results: 0.5 degree C change is significant, Vasomotor response to hyperoxia at baseline was not normal for the

group. Skin temperature regulation was calculated as FNTR. Baseline FNTR, group mean 1.88 degree C, after treatment 5.97 degree C. Closing of arteriovenous shunts in external carotid angiosomes made nose colder. FNTR improved in six patients. Seventh patient, FNTR no improvement.

Conclusion: Altered response to hyperoxia indicates possible role of oxygen radicals in hypersomnia. Drug effect correlated with improvement in FNTR. Cranial- facial skin temperature regulation imaging in hypersomnia can be correlated with sleep propensity.

Election of the board of the German Society of Thermography and Regulation Medicine (DGTR) - International Medical and Veterinary Thermographers IMVT

At the 2008 annual meeting and general assembly of the German Society of Thermography and Regulation Medicine (DGTR) - International Medical and Veterinary Thermographers IMVT, on May 31st, 2008 in Mannheim the board of the organization was elected. Prof. Reinhold Berz, MD, president, Dr. Helmut Sauer, MD, vice president, and Dr. Ronald Dehmlow, PhD, treasurer, were unanimously reelected

6th DGTR curriculum on veterinary and horse thermography in Germany

There is a huge demand for a structured and scientific based curriculum regarding infrared imaging of horses (equine thermography). Since 2006, the German Society of Thermography and Regulation Medicine (DGTR) - International Medical and Veterinary Thermographers IMVT has up to now organized 5 educational training and teaching courses, each over a period of 3 to 4 months. More than 50 participants have been trained, and more than 25 of them have got the DGTR certification (stage 1) after a one day examination in theory and practical application.

The 6th curriculum starts at Saturday, September 6th

Teaching language: German and English

Further details on page 12B-122

Short Course on Medical Thermography in Bucharest

In collaboration of the University of Medicine and Pharmacy "Carol Davila" in Bucharest, the University of Glamorgan, the European Association of Thermology and financially supported by the Romanian Ministry of Research and Education (Explanatory Workshop grant) a short course on Medical Thermography will be organized in Bucharest on 11th-to 13th September. 2008. This course is based on the material of previous courses held at the University of Glamorgan between 2001 and 2007 and its adaptations presented at the 8th International Thermography Conference in Auburn 2007 and the 7th QIRT Conference in Krakow 2008. Along with the medical and physics background of infrared imaging, the participants will learn standard procedures for checking the equipment for medical infrared imaging and how to apply standard views of the human body for recording reliable and accurate medical

thermal images. The detailed programme can be found on page 116 of this issue. In the session following this course, members of the Romanian Society of Thermology will present thermographic studies from Romania.

7th International QRM Conference 2nd– 4th April 2009

QRM is pleased to announce that QRM 2009 will also co-host in parallel with QRM and with the support of the United Kingdom Thermography Association (UKTA) 'The European Thermographers Conference 2009' at St Edmund Hall, Oxford 2-4th April 2009. This conference brings together researchers and industrial users of various condition monitoring techniques and will include a special focus on Infrared thermography in all its applications from Europe. This event builds on other successful thermography conferences from around Europe since 1996 and in England since 2000 that cross the boundaries of thermography including medicine, non-destructive testing, condition monitoring and remote sensing. The conference will include a historical tour of Oxford University where science research has been continuous since 1240 and a conference dinner in one of the ancient halls of the University.

We would again ask for your support and will be inviting keynote lectures, Chairpersons and themed sessions closer to the date. Multiple authors from the same Institution will also be offered discounted registration costs.

As you know there is traditionally a social programme, at QRM which is always well attended and we have another interesting social programme planned but always happy to receive your ideas and volunteers especially those musical.

A short course on Standardisation in Medical Thermal Imaging will be organised by the Medical Imaging Unit at the University of Glamorgan. Quality control in recording and analysing thermal imaging is an important task for users of thermal imaging in medicine and industry. In both fields of application accurate and reliable equipment is urgently needed. This course will provide information how thermal imagers can be tested to avoid poor imaging quality and what standards and protocols are available to achieve the best results in medical thermal imaging.

Invitation to Prospective Authors and Scope of Papers

All papers are refereed and edited. The range of papers includes the following applications of QRM:

- Condition Monitoring Techniques, including vibration analysis, IR thermography, wear debris, acoustic emission, building services engineering
- Industrial and business applications of QRM e.g., Quality systems and safety.
- Educational research, new courses and innovative techniques of instruction.
- Medical aspects of QRM including medical thermography.
- Digital Engineering and computer applications including artificial intelligence

- Non-Destructive Testing condition monitoring techniques

Instructions for Authors

Only completed papers must be submitted in word format on CD-Rom with completed registration to the Registrar, Mrs Karen Thomas, address below. An electronic template is available at the QRM website
http://www.qrmconference.co.uk/call_papers.htm

Mrs Karen Thomas, Registrar, Tyn-y-Coed,
Glynhir Road, Pontardulais, Swansea, SA4 8PX, UK.
Email: karen@qrmconference.co.uk
Tel/Fax: +44 (0)1792 885089. Mobile: 07854 003 327

Deadlines

Papers can be submitted before September 1st

Completed papers to the Registrar by this year October 31st 2008

16th THERMO in Budapest

The Scientific Society of Measurement, Automation and Informatics (MATE) will organise the 16th International Conference on Thermal Engineering and Thermogrammetry (THERMO) from the 24th to 26th of June, 2009 in the House of Technology Budapest, V., Kossuth Lajos tér 6-8.

The language of conference and abstracts is English. Along with oral presentation of papers, a poster session will be organised.

Duration of each presentation will be limited to 15 minutes and additional time for discussion will also be provided. The English translation of lectures not read in English should be submitted at the registration desk on the spot. LCD projector and computer with Windows OS for Microsoft Power Point format presentations is available. (Please note, that using your own computer is not allowed.)

Those intending to attend the conference are kindly invited to send a registration form to the address listed later, under "Information".

During the conference an exhibition of scientific and industrial instrumentation will be organised. Exhibitors from the field of temperature measurement and control, thermal properties, IR-imaging, anemometry, industrial energy control, heat loss detection equipment etc. are welcome.

The conference is hosted by the House of Technology in Budapest (Bp.V., Kossuth Lajos tér 6-8) located near the House of Parliament and the Danube. More information about the conference place and hotel accommodation will be sent after the arrival of the Registration Form.

Call for Papers

The photocopy-ready papers (for CD-ROM presentation) of max. ten A4 format pages to be presented on the conference are to be submitted **before 15 February, 2009**. To assist the work of the Scientific Committee the authors are kindly requested to point out the aim, method and results of their work in the summary to be provided according to the typing instructions.

Notification of the acceptance of abstracts will be forwarded to the authors until 30 November, 2008. The full text of all accepted papers will be included the CD-ROM Proceedings to be presented to the participants at the Conference.

Information

Application Forms and abstracts/papers should be sent to:

Dr. Imre Benkő, MATE Secretariat, House of Technology, III. 318. H-1372 Budapest, POB. 451., Hungary

Fax: +361-353-1406, Phone: +361-332-9571.

E-mail: mate@mtesz.hu

11th European Conference of Thermology

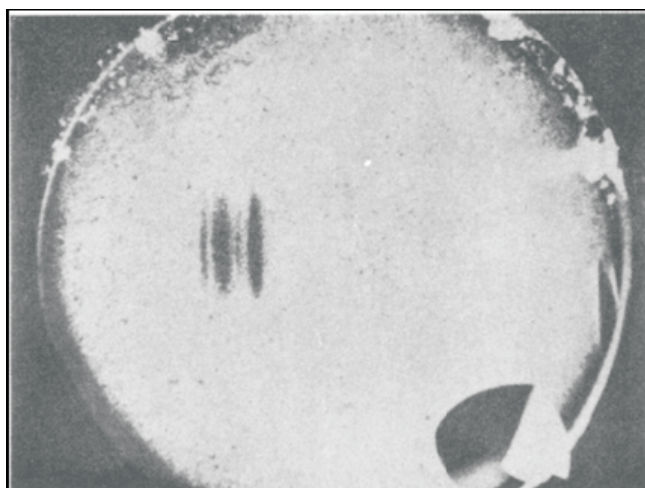
In 2006, the 10th European Conference of Thermology was held in Zakopane Poland and for the 11th Congress, scheduled for 2009 a number of proposals including Portugal, Greece, Majorca, Norway, England and Germany. The board of the European Association of Thermology discussed all these proposals during a board meeting at the QIRT conference in Krakow and came to the conclusion to organise the 11th European of Thermology in Germany in cooperation with the German Society of Thermography & Regulation Medicine (DGTR) that celebrates its 55th Anniversary in 2009. The German Society of Thermology (DGT) is also planning to join these meetings.

It is also 80 years ago that Marianus Czerny, who worked as Professor for Experimental Physics and Director of the Institute of Physics at the Johann Wolfgang Goethe-University in Frankfurt /Main from 1938 to 1961, published his paper on evaporography (*Czerny M. Über Photographie im Ultraroten. Zeitschrift für Physik. 1929, 53. 1-12.*). He used celluloid membranes covered with white naphthalene on one side and soot on the other side. When the naphthalene side was exposed to infrared radiation it evaporated and the area where naphthalene was sublimed became visible as a black image. Using this technique, Czerny was able to image an infrared spectrum (Figure 1). Further development of this technique using paraffin oil and bismuth layers on the celluloid membrane was named evaporography (*Czerny M Mollett P. Neue Versuche zur Photographie im Ultraroten. Zeitschrift für Physik. 1937. 114: 85-100*). Evaporography continued to be used as a method for thermal imaging (*McDaniel GW, Robinson DZ. Thermal Imaging by Means of the Evaporograph. Appl. Opt. 1962;1, 311-324*) and equipment was produced until 1974 (*Heinrich H. Die historische Entwicklung der Infrarot. Meßtechnik. Thermologie Österreich 1992, 2: 6-15*)

The venue will be one of the conference centres in the region nearby Frankfurt like Kronberg which served successfully for a conference of the Veterinary Branch of the DGTR in 2007.

The scientific committee of the European Congress is formed by experts in the field around Europe and the national delegates in the committee of the European Association of Thermology (names in alphabetical order: Prof. Dr K Ammer, Prof Dr R Berz, Dr G DallaVolta,

Figure 1
Infrared spectrum, imaged by Czerny in 1928 using evaporography



Dr J-M Engel, Prof. Dr A Jung, Prof Dr J.Mercer, Prof Dr A Nica, Prof Dr F Ring).

Main theme of the conference will be "Temperature measurements in humans and animals". The conference language will be English. However, papers in German will be accepted for presentation in the sessions of the Annual Meeting of the DGTR.

Papers related to the following topics in human and veterinary medicine are kindly invited:

- History of temperature measurement
- Current developments of temperature measurement devices for human and veterinary medicine
- Standards and Guidelines for Thermal Imaging in Human and Veterinary Medicine
- Thermal Physiology
- Temperature Measurement and Thermal Imaging as a diagnostic tool in
 - Angiology,
 - Complementary and Alternative Medicine
 - Dermatology
 - Gynaecology and Breast Imaging
 - Neurology
 - Neurosurgery
 - Paediatrics
 - Orthopaedics
 - Preventive Medicine
 - Rheumatology
 - Regulation Medicine
 - Rehabilitation Medicine
 - Surgery
 - Sports Medicine
- Temperature Measurement or Thermal Imaging for Treatment Monitoring or as Outcome Measure in
 - Angiology
 - Complementary and Alternative Medicine
 - Dermatology
 - Gynaecology and Breast Imaging
 - Neurology

Neurosurgery,
Paediatrics
Orthopaedics
Preventive Medicine
Rheumatology
Regulation Medicine
Rehabilitation Medicine
Surgery
Sports Medicine

•Temperature Measurement and Thermal Imaging as a diagnostic tool in Veterinary Medicine

•Temperature Measurement or Thermal Imaging for Treatment Monitoring or as Outcome Measure in Veterinary Medicine

•Thermotherapy in human and veterinary medicine

Papers outside the topics mentioned above are also welcomed. Deadline for the submission of papers is 15th May 2009. Abstracts should be structured into Background, Objective, Method, Results and Conclusion and must not show more than 300 words at maximum. A template for the abstract is provided on page 119 of this issue. Electronic submission is preferred and strongly suggested.