

WORLD LASEROLOGY CONGRESS

World Laserology Congress took place in Europe Union member Lithuania capital Vilnius on 19-20 September 2013 at the Radisson SAS Lietuva hotel's Congress centre. Congress arranged under patronage of President of Lithuania Republic Dr. Dalia Grybauskaitė, sponsored by Research Council of Lithuania and Vilnius University, opened by Minister of Health Dr. V. Andriukaitis, Vilnius University Rector Prof. J. Banys. Representatives of 14 countries, 3 continents hosted Vilnius. Joint meeting organizers were World Federation of Societies for Laser Medicine and Surgery, World Federation of Laser Dentistry, International Society for Laser surgery and medicine, International Phototherapy Association, local- Lithuanian Physics Society and Laser Medicine Association. Congress President- Dr. Aurelija Vaitkuvienė, Secretary General- Prof. Juozas Vaitkus (Vilnius University). General Assembly conducted by Prof. Toshio Ohshiro (Treasurer of Congress). Honorary Presidents of the Congress were Prof. Kazuhiko Atsumi and late Prof. Isaak Kaplan. Congress served secretariat- Via Conventus.

Section A. Phototherapy disclosed latest discoveries in neurology and rehabilitation. The pains, scars and bones metabolism controls by low energy lasers were presented by laser therapy frontier scientists, clinicians and a nursing specialist. Sub-erythral dosage of surgical lasers for scar therapy needs was demonstrated; neuropathic pain relief by transcutaneous laser application experiment objectively confirmed potential for neuropathic pain control, in cerebral palsy reduction of the tension of the soft tissues around the hip prevents femoral head deformation without surgical treatment, beneficial effect on bone metabolism prevents insufficiency fractures. Combination of wavelengths for facial paresis was more effective than single wave application. Combined laser, diode, magnetic and ultrasound therapeutic equipment was demonstrated. Home treatment chance for disabled was presented. Physicist presented a theory on LLLT mechanism, biological saturation phenomenon, biphasic-dose effect relationship.

Section B. Photodynamic therapy in classical actinic ceratosis and new applications in advanced glandular cancer (AdCC), glioma cell culture, precancer (multiple Bowen's disease, cervical CIN2+) and microvascular component of complicated hemangiomas were presented. Dosage importance as factor for the treatment results was noticed. Successful combination of PDT with CO₂ laser or sono ablation alongside with classical and new photosensitizers „Photolon” was demonstrated. When no effective chemotherapy exists in AdCC metastases, HpD was used as photo and radiosensitizer with rapid remission achievement. Organ saving treatment with special cervical light applicator revealed as promising PDT in childbearing age women.

Session C. Biomedical optics. Physics recognize new science branch of Quantum Medicine, coherence importance for LLT devices is under discussion. Laser adaptation for advanced medicine, environmental monitoring and food quality needs occurs in industry. International companies and European countries, including Baltic States, Lithuanian (STANDA, Integrated Optics) producers engaged in miniaturization, safe parameters for in vivo application, combination of waves, optical sources and other physical energy types in one medical device. CoMra-Therapy is to provide simultaneous energetic support (ATP over synthesis with NIR laser and magnetic field), neurochemical messaging (LEDs effect on skin) and mechanical stimuli (ultrasound) directly to the diseased cells and supporting systems. Diagnostic and treatment function availability in one device proposed. The simplification of optical devices, wide application including disaster or self-service, informative technologies driven communication inclusion for health service coordination is in listing of future steps. Just few of interaction possibilities between light and patient are already used in medicine. Light gives information which is crucial for personalized medicine. Photo-diagnostic imaging by SiaScopy drives the skin vascular anomaly transdermal surgery with symptoms relief achievement. DySIS spectral colposcopy improves accuracy of pathology diagnostics. Photodynamic diagnosis of skin and mucosal tumors gives red coloration for malignant areas. Intraarterial tumor artery supply with Photofrin allows avoiding artefactual fluorescence of oral mucosa in the gums and basis of the tongue, which occurs in healthy tissue. Autofluorescence bronchoscopy sensitivity is higher of white light and is useful for endobronchial tumor spread evaluation in planning treatment preferable in precancer or early stage disease. The in vitro diagnostics of smears, biopsies is promising for diagnosis at the point of care, allowing the improvement of treatment management (cervical screening, vertebral disc surgery). Spectra evaluation methods influence for diagnosis accuracy. Combination of spectra decomposition to components using MCR-ALS algorithm and implementation of an ANN

seems a promising direction for analysis of cervical PAP smear fluorescence spectra.

Section D. Photodiagnosis become must performed step in treatment decision at the point of care. Optical diagnostics- a principle widely used in industry is spreading in health care by application of wide range of particular physical effects for chemical composition detection, imaging, cells, tissues differentiation, reaction to stimuli establishment and for reaction to medications or other treatment, too- for personalized medicine. SiaScopy for skin fluorophore and DySIS colposcopy for mucus reflectance effects imagination, intra-arterial PDT for mucous cancer delineation, autofluorescence imaging in endoscopy and microscopy also statistical evaluation of human tissue fluorescence spectra in pathology groups with physical theory in optical diagnosis of biotissue were presented in this section.

Session E. Laser Surgery, biomodulation. Medium and high energy lasers and their combination become more selective in targeted destruction and drive the positive feedback from live tissue: tumor, tattoo fractional destruction, multi-programs for different type of tissue application, decontamination and scar management. New outpatient surgery services experience: photo surgery, vertebral disc degeneration, endovenous obliteration, vaginal tissue insufficiency, malformations treatment remote results give new directions for improvement of technology according clinical efficiency. Lasers applications in palliative cancer care in gastrointestinal tract, tracheobronchial tree, guarantee the quality of life in final phase of it. New natural photosensitizers seem to be more selective for cancer tissue destruction and very faster.

Plenary Session presented the global view on Quantum medicine development and incorporation into advanced health care system. Advantages (miniaturization, data clouding, wound decontamination, necrosis debridement, bloodless, aseptic, painless surgery) of photo diagnosis and photo treatment could become a new solution for disaster medicine. Cerebral palsy consequences amelioration, socialization of patients solves huge social problem and resources, if nationally regulated. Central nervous system damage related health inability restoration by laser light application is confirmed in experimental and personal clinical investigations, the confirmation of optimal biomodulation methodology, self LLT effect by frontier scientists is under provision for health care managers. Laser based spectroscopy supplies medicine with on-site diagnostics in vivo, in vitro, and digital data communication ability which gives a perspective of essential improvement of health care provision to less developed or distant regions. Electric and light safety is a ground stone for successful protrusion of Quantum medicine into practical sphere of health care. National and international education on light technology application in medicine, proposed as new LASEROLOGY subject begins from field of dentistry, multidisciplinary courses for medical specialists needs to be elaborated and legally confirmed by universities.

Pre-Congress Courses:

Laser Safety Courses were provided for laser and light application beginners, nurses and doctors, for medical service providers, nonmedical laser users to introduce the fundamental concepts of laser science, technology, and safety, Clinical lasers of all wavelengths, applied to a variety of specialties, were highlighted.

Global standards for safe use of lasers, including the IEC 60825 (international laser safety) standards, were used as the basis for safety instruction. Associated regulations, agencies, and professional organizations having an impact on the safe use of lasers in healthcare, were fundamental to developing a risk management perspective on clinical laser safety. Theoretical course had practical training at out-patient clinic facilities,

Laser safety course for surgeons provided basics of biomedical optics, light-tissue interaction, live attendance at vascular surgery intervention.

Laser in gynecology provided introduction and practical application of Er:YAG laser for vaginal relaxation syndrome, vaginal atrophy and stress or mixed urinal incontinence. Smooth mode, ablative mode and laser therapy applications in gynecology were presented.

Lasers in neurology course. Peripheral and central nervous system injury and repair mechanisms and light tissue interactions were demonstrated providing animal experiments results.

Introduction for application of laser therapy for suppressing miothonia in cerebral palsy for enhancement of functional training effect was presented. Nonsurgical laser therapy for treatment of traumatic spinal cord injuries was demonstrated in video records cases from over 9 years of observation. Improvement in motor function and voluntary muscular activity achievement was recorded objectively after each session. Stand up and walking result appears after 1 and 2 years combining laser therapy and physical training. New ComRa Therapy device: laser,

diode, magnet and ultrasound therapy device applications were demonstrated.

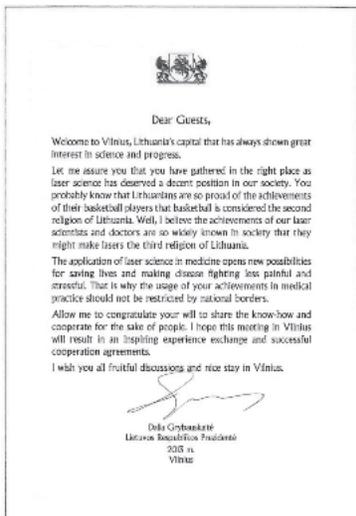
Laser Dentistry course was presented by WFLD Presidents, EMDOLA Academy founders. European education program on oral laserology was presented. Advanced laser instrumentation and optimal application procedures were demonstrated by multimedia imaging.

Social event:

During lunch time of plenary session Elected President of World Federation of Laser Surgery and Medicine, Founder and President of International Academy of Laser medicine and Surgery Leonardo Longo introduced local society listeners to the effective laser treatment of spinal cord injuries, video film on treatment course and recovery was shown. Questions were answered.

General Assembly of all attending laser medicine societies (IPTA, WFSLM, WFLD, ISLSM, ELA, EMLA, ASLSM and academies IALMS, EMDOLA, AHA) begin from introduction to WFSLM history presented by it General Secretary . Separate Assemblies of IPTA, ISLSM, WFSLM performed their board meetings and elections. Rector of Vilnius University cordially welcomed General Assembly, disclosed youthful and frontier temper of Vilnius University, founded in 1579.

Written by *Aurelija Vaitkuviene and Juozas Vaitkus*



Welcome of President of Lithuania Republic, Dr. Dalia Grybauskaitė



ASLMS president, Prof. Juanita Anders (JAV), IPTA5 Congress President Dr. Aurelija Vaitkuviene (Lithuanian, Vilnius university)



Welcome by Vilnius University Rector, Prof. Juras Banys:



General assembly of ISLSM, WFSLMS, WFLD and IPTA members in Vilnius U Smuglevicius hall.