

Interdisciplinary Workshop on Tissue Regeneration Related Researches

Held in São Paulo on 24th April 2006 in hotel Blue Tree Towers

Extracorporeal Shockwave Therapy is no longer the exclusive tool for urologists or orthopedists-traumatologists, but is penetrating securely and fast in other medical and bio-medical areas ; the results obtained, thanks to the pioneer work in basic experimental studies and clinical research into the working mechanisms and biological responses and effects of shockwaves by leading global scientists such as Prof. Dr. Ching-Jen Wang and his team of researchers of the Chang Gung University School of Medicine and Chang Gung Memorial Hospital in Kaohsiung Taiwan, the concept of shockwave therapy changed and created new visions and perspectives about the clinical applicability for other medical disciplines.

Important clinical and application studies led by Dr. Wolfgang Schaden and Dr. Richard Thiele brought shockwave technology and its unambiguous and consistent results to the knowledge of the medical professionals, and thus stimulating a wider implementation of shockwave therapy to the benefit of the patients suffering from chronic musculoskeletal diseases.

It was under their leadership that the ISMST, the International Society for Musculoskeletal Shockwave Therapy, was founded ; the German Shockwave Society, called DIGEST, provides for a platform for the shockwave industry to define parameters and standards to achieve comparability and correlation between shockwave generating technologies, physical parameters and clinical results.

Experimental biological studies with Stem Cells and Plasma Rich Growth Factors in Reconstructive Surgery by a group of young medical researchers in Buenos Aires, supported by the Department of Oral Pathology of the University of Buenos Aires, in parallel with Brazil's Prof. Silvio Duailibi's results in stem cell for tooth regeneration and periodontal tissue engineering, may create new openings to other medical disciplines.

Excellent results with experimental animal studies with focused shockwaves were obtained by the UNESP Veterinarian Hospital in Botucatu under the leadership of Profa. Ana Liz Alves ; her experiences were shown at the 2006 Equine Congress in Spain ; no doubt that this will have an impact on further advances in the field of medical veterinarian and supportive human studies.

The results in Woundhealing using extracorporeal parallel flatwaves shown at the 2005 ISMST Congress in Vienna stimulated Dr. Paulo Roberto Dias dos Santos to start a series of pilotstudies using the same shockwave technology ; same clinical results as demonstrated at the Congress by Dr. Schaden and Dr. Thiele were obtained ; these encouraging results led to the start of a multiclinic investigation between several Brazil Clinics into Pressure Ulcers treated with parallel flatwave technology, and a clinical study with Hospital Sao Francisco in São Paulo.

In particular the publication of Prof. Dr. Wang, introducing the biological mechanism, responses and effects of shockwaves inspired the organization of a workshop in Brazil to evaluate the state of the art in researches in various medical disciplines which link or may link to the biological model, such as Plasma Rich Growth Factors (PRGF's), Stem Cells and Shockwave Therapy.

The workshop was attended by chiefs of staff, researchers and medical specialists mainly with the aim to interchange visions and exchange experience, discussing the interfaces and interactivity of the 3 technologies presented.

As a general consensus it was thought beneficial to organize this type of workshops with certain frequency.

Programme

Shockwave Treatment of Equine Tendinitis	Prof ^a . Ana Liz Alves	Brazil
Autologous Tools in Tissue Engineering	Dra. Alejandra da Silva	Argentina
Experimental models to assess Tissue Repairs	Dra. Ana Collet	Argentina
PRGF in Reconstructive Surgery	Dr. Alejandro Cole	Argentina
Use of Adult Stem Cells for Tissue Engineering of Biological Substitutes	Prof. Silvio Duailibi	Brazil
Biological Mechanism of Musculoskeletal Shockwave Therapy	Prof. Ching-Jen Wang	Taiwan
Woundhealing – clinical results	Dr. Paulo Roberto Dias dos Santos	Brazil
Treatment of Osteonecrosis of the Femoral Head with shockwaves	Prof. Ching-Jen Wang	Taiwan
Summary and Discussion		

The workshop was further attended to by

- Prof. Dr. Flávio Faloppa - UNIFESP Escola Paulista de Medicina
- Prof. Dr. Claudio Santili – FCMSCSP Santa Casa de São Paulo
- Prof^a. Dra. Monica Talarico Duailibi - UNIFESP Regenerative Dentistry
- Prof. Dr. Adamastor Pereira – UFRGS Vascular Surgery
- Prof. Dr. Lindomar - Comitê SBOT Osteoporose e Doenças Osteometabolicas
- Dr. Jürgen Jacobsen - Periodontal Tissue Engineering
- Dr. Sergio Bisogni – Urologist and specialised in Peyronie-disease
- Dra. Lin Tchia Yan - Professora do Centro de Estudo Integrado da Medicina Chinesa FMUSP
- Dra. Perola Grinberg Plapler – Dir. da Div. De Méd. Física da HC FMUSP
- Eng^o. Tomaz Puga Leivas – I.O.T. Hospital das Clinicas Research Projects
- Dra. Ana Claudia – Espec. Medica Terapia por Ondas de Choque Clinica CORTREL
- Dr. Paulo Rockett – Espec. Medico Terapia por Ondas de Choque Clinica ORTOSOM
- Dr. Paulo Gonçalves – UNIMED RGdS
- Dr. Christian Dorfmueller – International Shockwave Foundation Switzerland
- Dr. Axel Voss – NONVASIV Shockwave Technologies Switzerland
- Dra. Claudia Arantes – Medico Especialista em Dermatologia
- Dra. Claudia Valeria Seullner Brandão – UNESP Botucatu
- Dra. Ana Cristina Ferreira Bassit – ALBA Veterinary Surgery
- Dra. Brunna Patrícia Almeida da Fonseca – UNESP Botucatu

Abstracts :

Experimental Models to assess Tissue Repair.

Ana M. Collet, D.D.S., Ph.D.

Department of Oral Pathology, School of Dentistry, University of Buenos Aires.

Experimentally induced wounds in animal models provide vital insights into the mechanisms and pathophysiology of tissue repair and are useful in the initial evaluation of the safety and effectiveness of potential therapeutic agents. Many different aspects of the healing process can be characterized and quantified in a reproducible, controlled environment.

Rats have been widely used in the study of soft tissues and bone healing and the efficacy of different treatment modalities. This particular animal species is often selected for its availability, low cost, and small size.

In our laboratory the full thickness skin wound model is used to study the process of soft tissue wound healing. We have developed and shown the validity of experimental models to assess bone repair in a) post tooth extraction bone healing, and b) related to metallic implants and bone fillings in rat tibia as well as in post tooth extraction sockets.

We have reported the usefulness of these models to study the effect of local (PRP, PRGF, bone filling materials, metallic implants) and systemic factors (Diabetes, corticosteroids, biphosphonates, nutritional factors, Chagas disease).

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Autologous Tools for Tissue Engineering

Dra. Da Silva Minas, Maria Alejandra

Tissue engineering applies biological, chemical and engineering Principles in the development of functional substitutes designed to meet the needs of each individual patient and repair site.

In the past few years, several research groups have explored the feasibility of using platelet-rich matrices as tissue engineering scaffolds. The therapeutic use of autologous platelet-rich plasma constitutes a relatively new biotechnology that has been a breakthrough in the stimulation and acceleration of soft-tissue and bone healing. The fact that platelets secrete growth factors and active metabolites means that their applied use can have a positive influence in clinical situations requiring rapid healing and tissue regeneration.

The efficiency of this process lies in the local and continuous delivery of a wide range of growth factors and proteins, mimicking the needs of the physiological wound healing and reparative tissue processes. Thus, the application of platelet-rich plasma has been extended to many different fields, including orthopaedics, sports medicine, dentistry, cosmetic and periodontal medicine and cosmetic, plastic and maxillofacial surgery.

We are a multidisciplinary group that studies and works with, the PRGF System (Plasma Rich in Growth Factors) developed by Dr. Eduardo Anitua.

PRGF in Reconstructive Surgery

Dr. Alejandro Cole

Musculoskeletal disorders are a major cause of morbidity throughout the world. They have a substantial impact on quality of life, including disability, with widespread economic consequences. The severity of this problem is illustrated by the increasing number of patients suffering from articular diseases and osteoporotic fractures.

In addition, musculoskeletal injuries derived from sports activities and road traffic accidents also contribute to the escalation of social and financial costs. As a result of this, the period between the years 2000 and 2010 has been named the decade of bone and joint, as an international initiative to promote and advance research on prevention, diagnosis and treatment.

Considerable research and clinical efforts are being made to accelerate tissue healing and to improve the therapeutic treatments for these musculoskeletal disorders. The aim of this presentation is to show you our experience in Reconstructive Surgery with PRGF System

Extracorporeal Shockwave Therapy for Chronic Skin Lesions

Authors: Paulo Santos; Ana Souza; P. Rockett; Marco Guedes

Institutions: Orthomaster, São Paulo; Cortrel, Rio de Janeiro; Ortosom, Porto Alegre;

The aim of this study was to evaluate the efficacy and the safety of extra corporeal shock wave therapy for the treatment of chronic skin lesions.

The study consisted of patients of ulcus cruris or ulcera at their extremities as well as chronic open wounds, septic or aseptic. The disease should have existed for a minimum of 3 months and should be categorized as chronic disease ; therapy resistant for at least 3months. Patients aged 18 and older were included in the study.

Since October 2005, we began to treat some patients with different chronic skin lesions ,using a Reflectron – HMT device with a special therapy head (to defocus the shockwave) developed by Switech Medical. Treatments were performed in intervals of 2 weeks and different numbers of pulses were applied dependent on the size of the wound.

All patients were treated without anesthesia and used only dressing with physiologic serum to clean the wound after the treatment with shock waves.

The study showed promising results with complete or partial healing in most of the patients.

Prospective randomized trials have to be performed to prove the safety and efficacy of shockwave therapy to treat chronic skin lesions.