



MONOCYTES

BLOOD OF CARE

CLINICAL EVIDENCES





REGENERATIVE MEDICINE FIELDS OF APPLICATION



MONOCYTES

Changes in Macrophage Phenotype and Induction of Epithelial-to-Mesenchymal Transition Genes Following Acute Achilles Tenotomy and Repair

Kristoffer B. Sugg,^{1,2,3} Jovan Lubardic,^{1,2} Jonathan P. Gumucio,^{1,2} Christopher L. Mendias^{1,2}



The FASEB Journal • Research Communication

Macrophages recruited *via* CCR2 produce insulin-like growth factor-1 to repair acute skeletal muscle injury

Haiyan Lu,* Danping Huang,* Noah Saederup,^{†,§} Israel F. Charo,^{†,§}
Richard M. Ransohoff,^{*,†} and Lan Zhou^{*,†,1}

Macrophage Cell Lines Produce Osteoinductive Signals That Include Bone Morphogenetic Protein-2

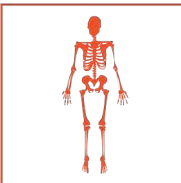
C. M. CHAMPAGNE, J. TAKEBE, S. OFFENBACHER, and L. F. COOPER

Dental Research Center, University of North Carolina School of Dentistry, Chapel Hill, NC, USA

Synovial tissue macrophages: friend or foe?

Mariola Kurowska-Stolarska,^{1,2} Stefano Alivernini³

#ORTHOPEDICS



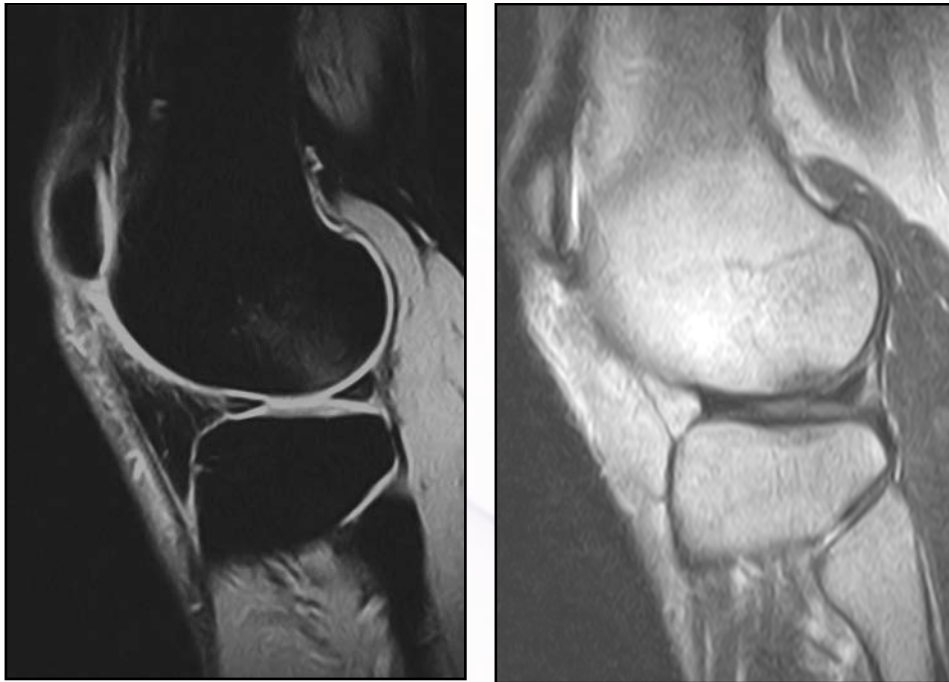
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REGENERATIVE MEDICINE TO PREVENT EARLY OSTEOARTHRITIS ONSET ON LATE-CAREER AND FORMER SOCCER PLAYERS

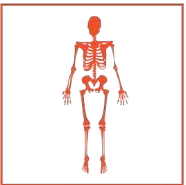
Bruno A¹, De Donato M¹, Arnaldi E¹, D'Agostino MC², Tibalt E², Respizzi S²

¹Arthroscopic and Reconstructive Orthopedic Unit of the Knee, Humanitas Research Hospital, Rozzano, Milan, Italy

²ESW Therapy & Research Center, Rehabilitation Department, Humanitas Research Hospital, Rozzano, Milan, Italy



#ORTHOPEDICS
#OSTEOARTHRITIS



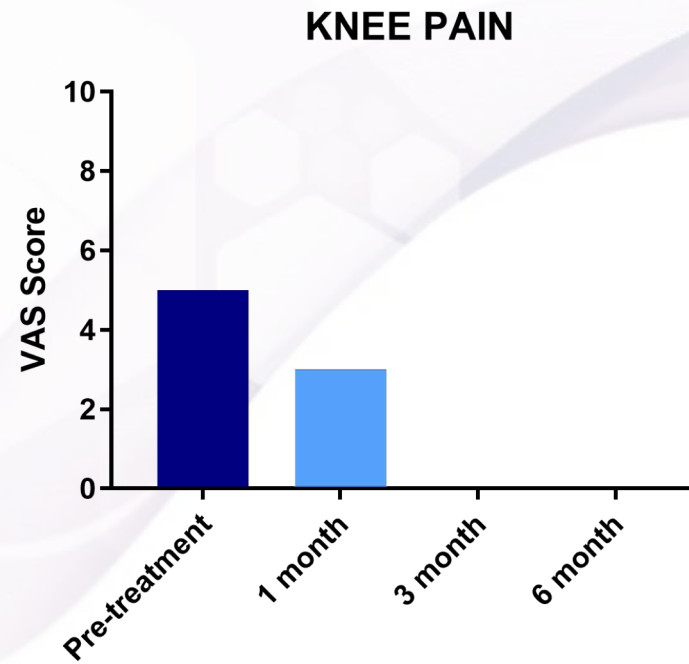
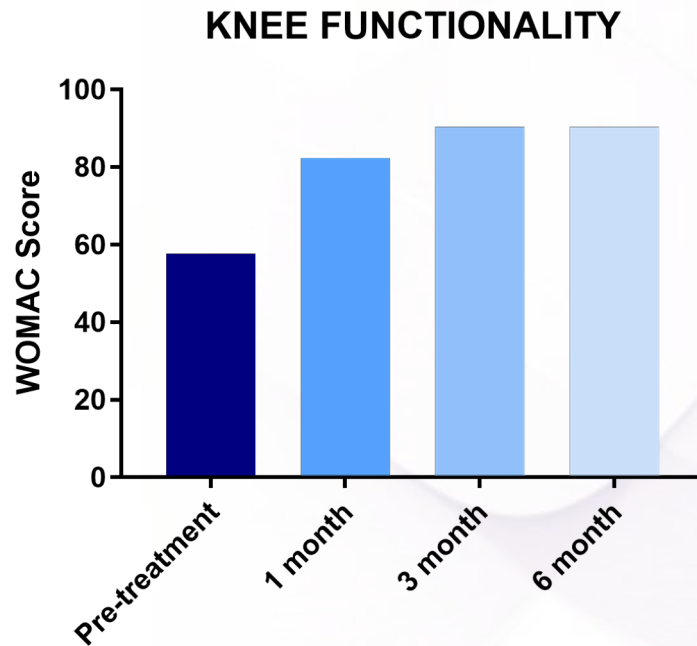
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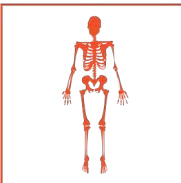
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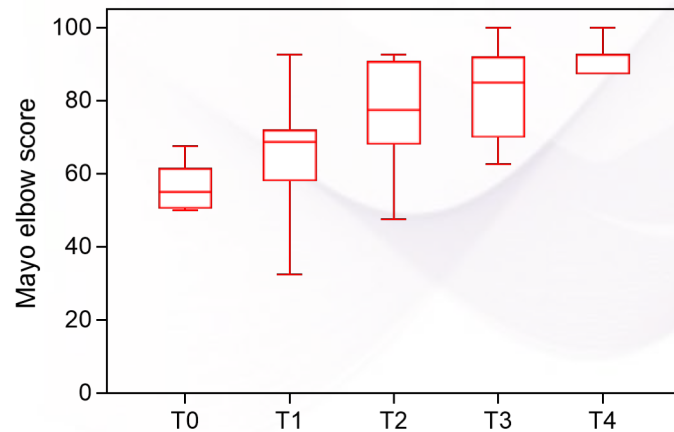
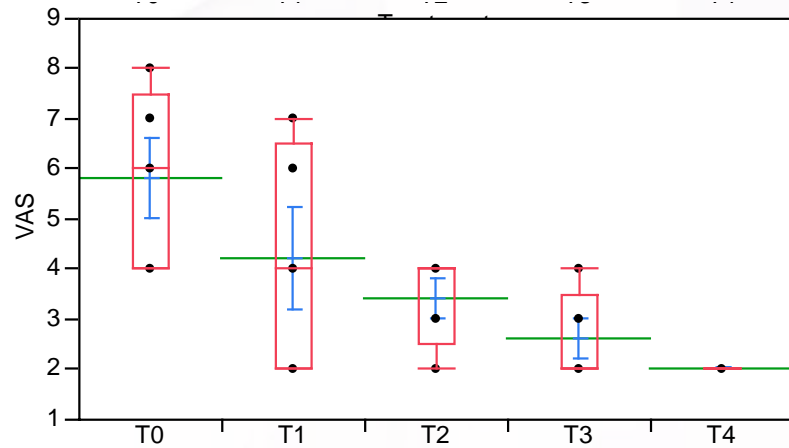


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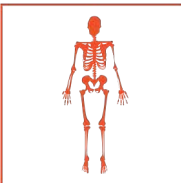
PMBCs INFILTRATION AMELIORATES CLINICAL OUTCOME OF CHRONIC TENDINOPATHIES

Tognini G¹

¹Centro Diagnostico Apuano, Marina di Carrara, Italy



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#TENDINOPATHIES

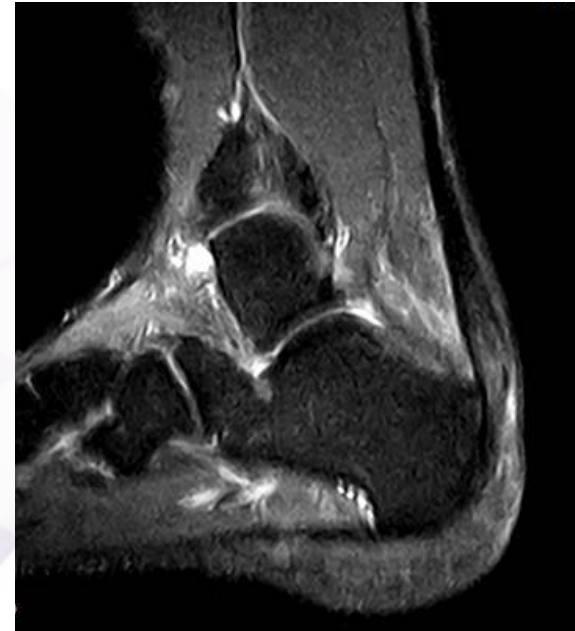
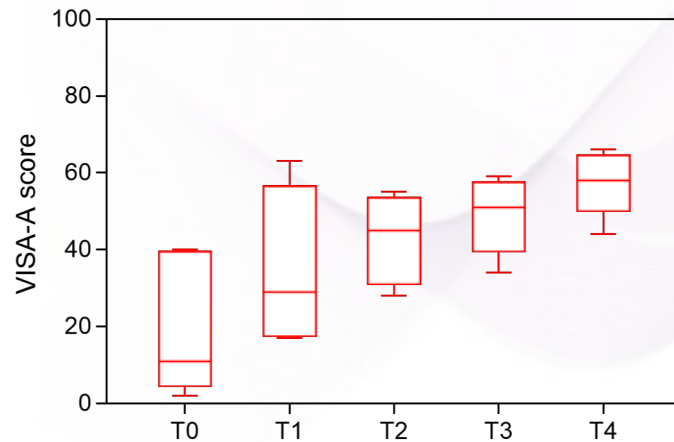
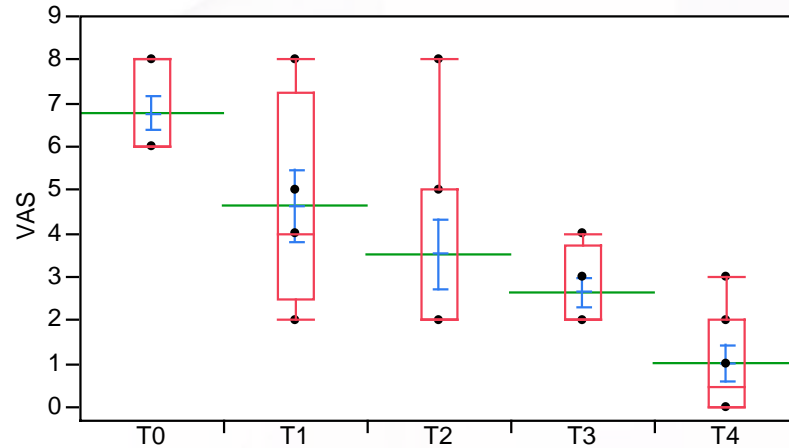


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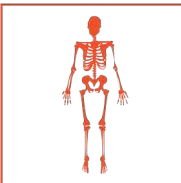
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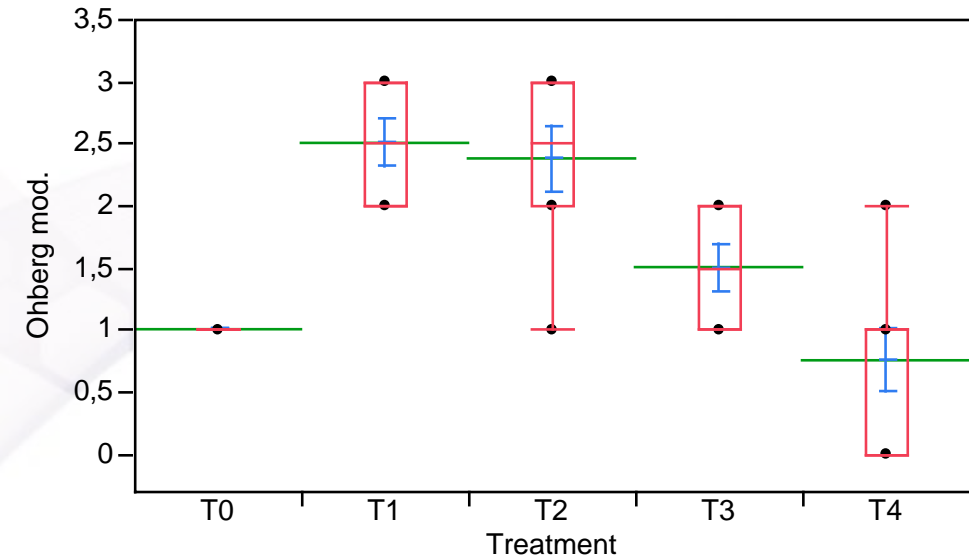
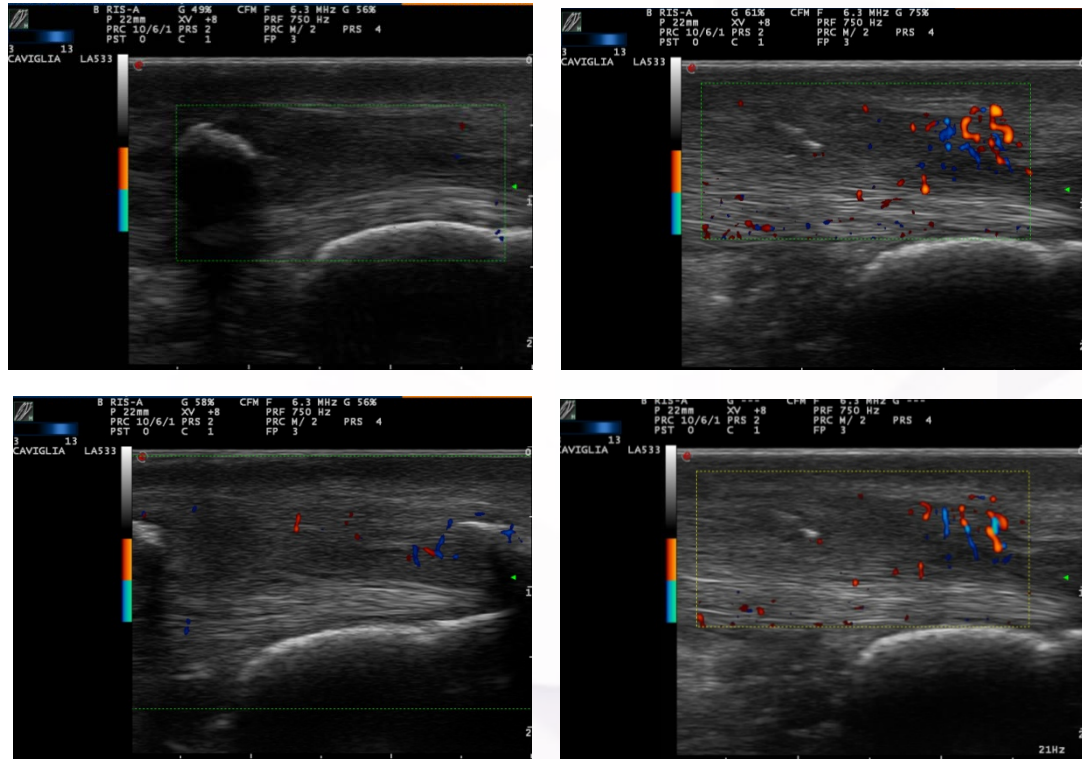


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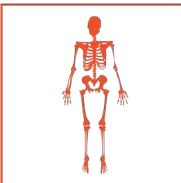
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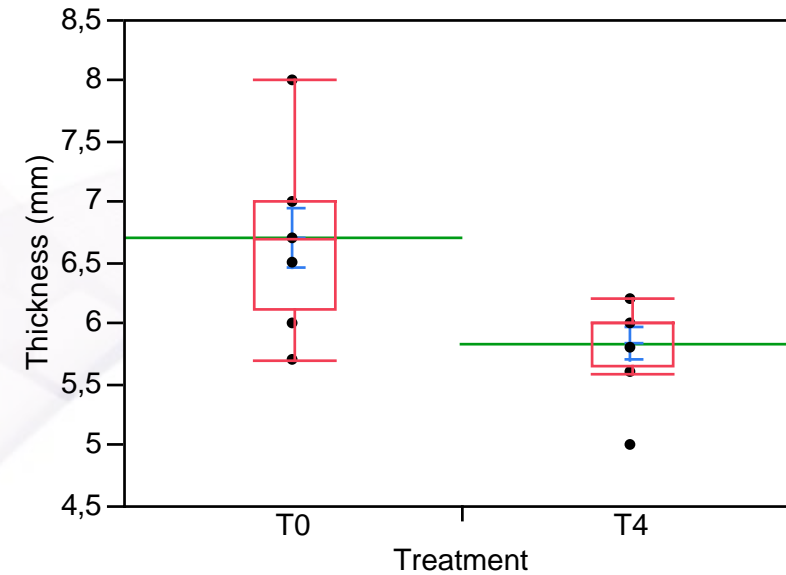
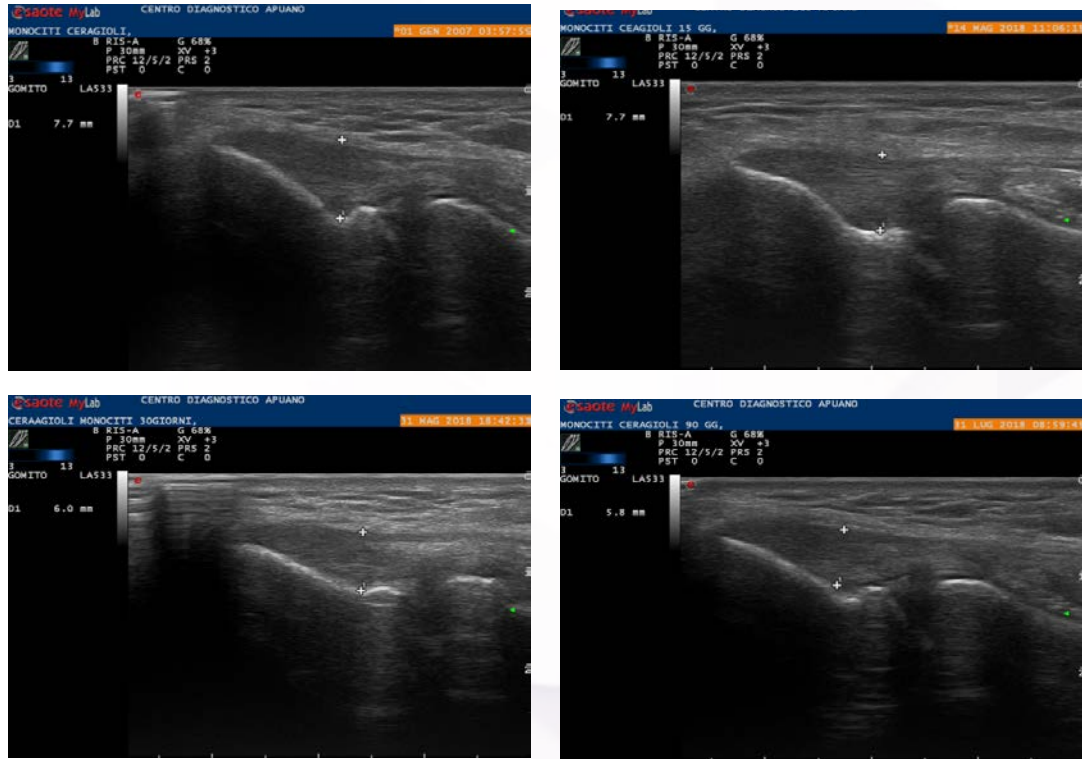


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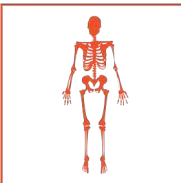
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MONOCYTES

Elevated Monocytes in Patients with Critical Limb Ischemia Diminish After Bypass Surgery

Dania Magri, M.D.,^{*,†} Penny Vasilas, RN,^{*} Akihito Muto, M.D., Ph.D.,[†] Tamara N. Fitzgerald, M.D., Ph.D.,^{*,†}
Tiffany T. Fancher, M.D.,[‡] Aaron J. Feinstein, BA,[†]
Toshiya Nishibe, M.D., Ph.D.,[§] and Alan Dardik, M.D., Ph.D.^{*,†,1}

Peripheral Blood Mononuclear Cells for Limb Ischemia

Masayoshi Suda[†], Ippei Shimizu[†], Yohko Yoshida, and Tohru Minamino

Role of Monocytes in the Treatment of Chronic Limb Ischemia and “Hard to Heal” Ulcers

Chiara Palermo, MD, Angelo Sanfiorenzo, MD, Cristina Trigona, MD, Giulia Bernardini, MD, Pierfrancesco Veroux, MD. Vascular Surgery and Organ Transplantation Unit, University of Catania, Catania, Italy

Peripheral blood mononuclear cell secretome for tissue repair

Lucian Beer^{1,2} · Michael Mildner⁴ · Mariann Gyöngyösi⁵ · Hendrik Jan Ankersmit^{2,3,6}

Secretome of Peripheral Blood Mononuclear Cells Enhances Wound Healing

Michael Mildner^{1,3}, Stefan Hacker^{2,3,3}, Thomas Haider^{3,4}, Maria Gschwandtner¹, Gregor Werba⁵, Caterina Barresi¹, Matthias Zimmermann^{3,4}, Bahar Golabi^{3,4}, Erwin Tschachler^{1,6}, Hendrik Jan Ankersmit^{3,4}



Safety and tolerability of topically administered autologous, apoptotic PBMC secretome (APOSEC) in dermal wounds: a randomized Phase 1 trial (MARSYAS I)

Elisabeth Simader^{1,2,9,10}, Denise Traxler^{1,2}, Mohammad Mahdi Kasiri^{1,2}, Helmut Hofbauer^{1,2,9,10}, Michael Wolzt³, Christoph Glogner^{1,2}, Angela Storka^{3,11,12}, Michael Mildner^{4,9}, Ghazaleh Gouya³, Alexandra Geusau⁵, Carola Fuchs³, Claudia Eder³, Alexandra Graf⁵, Michaela Schaden⁷, Bahar Golabi⁴, Marie-Bernadette Aretin¹¹, Susanne Suessner⁸, Christian Gabriel¹³, Walter Klepetko³, Erwin Tschachler⁴ & Hendrik Jan Ankersmit^{1,2,9,10}

The Role of Macrophages in Acute and Chronic Wound Healing and Interventions to Promote Pro-wound Healing Phenotypes

Paulina Krzyszczyk¹, Rene Schloss¹, Andre Palmer² and François Berthiaume^{1*}

#WOUND
#VASCULAR



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Objective: The healing of chronic lesions in patients with critical limb ischemia (CLI) is not easily achievable. Both in vitro and in vivo studies have shown that plasma mononuclear cell concentrates (MNCs), injected in the ischemic site, act through a dual mechanism: antalgic and anti-inflammatory action and neoangiogenesis stimulation. This monocentric observational clinical study evaluated the safety and efficacy of MNCs in pain reduction and wound healing in patients with CLI.

Methods: From January 2017 to January 2018, there were 26 patients with CLI (grade III, category 5 Rutherford) enrolled in the study. After duplex ultrasound evaluation, 14 of 26 patients underwent a peripheral revascularization; the remaining 12 were considered not suitable for treatment. All patients underwent surgical and microbiologic examination of the ulcers. The MNCs were injected along the leg vessel's course, in the bottom of the ulcer, and around ulcer margins. The end points, evaluated after three cycles, were healing or improvement of the lesion (according to the Texas wound classification system) and pain reduction (quantified by the numeric rating scale).

Results: In 21 patients (80%), 11 of whom revascularized, wound healing and the simultaneous disappearance of pain were achieved. In the remaining five patients, although complete ulcer healing could not be achieved, the benefit in pain control was significant.

Conclusions: These promising preliminary results document an important antalgic, anti-inflammatory, and neoangiogenesis action of MNCs.

Role of Monocytes in the Treatment of Chronic Limb Ischemia and “Hard to Heal” Ulcers

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#WOUND

#VASCULAR



MONOCYTES



IATROGENIC CHRONIC ULCER

HEALING IN 4 WEEKS



#WOUND

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M O N O C Y T E S



VASCULITIS-INDUCED CHRONIC ULCER

HEALING IN 5 WEEKS



#WOUND

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MONOCYTES



SACRAL DECUBITUS

HEALING IN 7 WEEKS



#WOUND

#VASCULAR



MONOCYTES



#WOUND

#VASCULAR



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