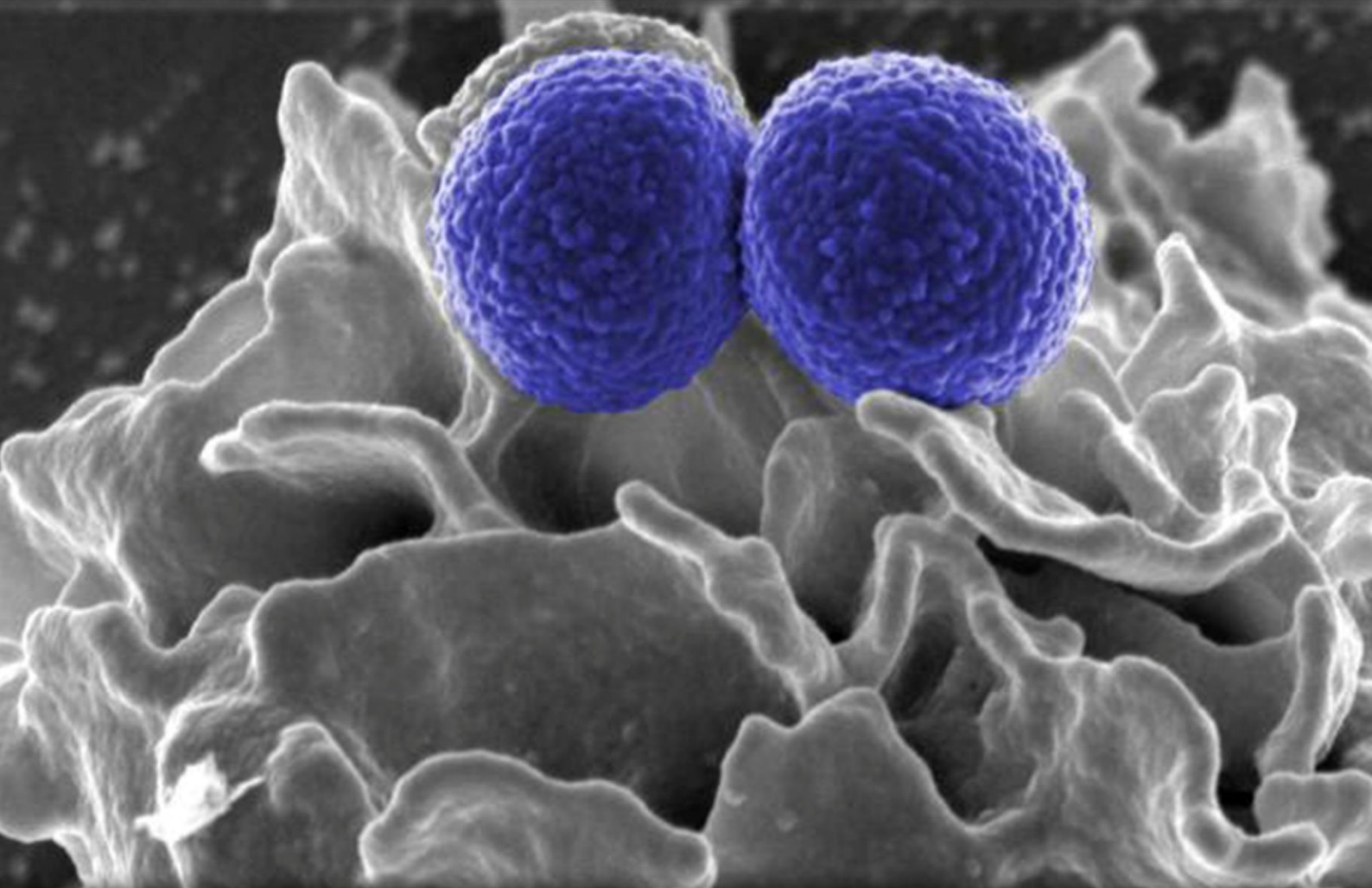


Wound Healing 2016

ABSTRACTS



26TH - 28TH JANUARY 2016
LONDON, UK

EuroSciCon 

This inaugural interdisciplinary event is an open forum for discussion of the processes involved in wound healing, recent advances in its research and therapies related to wound healing and infection. Using a multi-professional and inter-specialty approach, and an international setting, this event promises plenty of opportunity for discussion and debate set in an informal atmosphere.

This event has [CPD accreditation](#)

This is a draft agenda
The agenda will be finalised two weeks before the event
www.WoundHealing2016.com

#Wound16

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Invited Speakers Abstracts

Development of novel wound dressings for infection control: exploration of infection-responsive release and prophylactic bacteriophage therapy

Dr Diana Alves, School of Pharmacy and Biomolecular Sciences, University of Brighton / Blond McIndoe Research Foundation, Brighton UK

Burn wounds are typically colonised by a variety of potential pathogens at sub-clinical levels. This low-level colonisation, not easily detected, progresses to invasive infection, where clinical intervention is required. There is also evidence that infection can influence the healing process and result in increased scarring. However, diagnosis of infection in burn patients is problematic, and often not detected until overt symptoms arise, yet prompt treatment at the earliest onset of infection stands to provide significant treatment and cost benefits. In addition, the range of organisms normally comprising the wound microbiome include those that are often multidrug resistant (MDR), such as *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Enterococcus faecalis*. We aim to develop infection responsive materials suitable for incorporation in wound dressings, and the delivery of novel antimicrobial agents capable of dealing with key multidrug resistant pathogens. Since we will be targeting MDR organisms, and in light of the current drive to reduce antibiotic usage and identify alternatives, we aim to deliver bacteriophage to the wound bed, which are able to infect and kill target bacteria regardless of antibiotic resistance profile and moreover our results show a clear ability to reduced biofilms caused by those MDR clinical isolates.

Periodontal wound healing and its enhancement by application of lasers

Mr Radko Chmurovic, Wise Dental Ltd, Nottingham, UK

Established periodontal wound bears characteristics of chronic and infected lesion. Infective agents form complex biofilms on hard and soft tissues of periodontal pockets and invade its cellular lining. Application of lasers stimulates release of multiple growth factors. Antibacterial photodynamic therapy (aPDT) combines biostimulation of lasers with bactericidal and fungicidal effect of photodynamic reaction. Generated reactive oxygen species are effective against planktonic, sessile and intracellular pathogens. aPDT with certain parameters becomes cytotoxic to human cells. Keratinocytes appear to be more susceptible than other cell lines. Selective ablative effect of aPDT on epithelial lining of periodontal pocket may explain dramatic clinical outcomes.

Roles of Mesenchymal Stem Cells in Cutaneous Wound Healing

Mr Moyassar Al-Shaibani, Institute of Cellular Medicine, The Faculty of Medical Sciences, Ground Floor William Leech Building, Newcastle University, Framlington, Newcastle upon Tyne, UK

Mesenchymal stem cells (MSCs) and their secretions have gained attention as promising tools to promote wound healing. Two main strategies could be applied for the use of MSCs in the treatment of non-healing wounds. MSCs show ability to differentiate into the different cells of skin epidermis. Also, MSC secretions collected from in vitro cultures, which are known as MSC-conditioned medium (MSC-CM), are reported to promote migration of skin cells such as keratinocytes and fibroblasts into the injury site. Also, MSC-CM enhances the differentiation of primary keratinocytes into the different layers of epidermis.

Enhanced Wound Healing with Copper Oxide Impregnated Dressings - Molecular Mechanisms

Dr Gadi Borkow, Cupron Inc., Israel

Copper plays a key role in angiogenesis and skin regeneration. We demonstrate that application of wound dressings containing copper oxide to wounds inflicted in genetically engineered diabetic mice resulted in increased gene and in-situ upregulation of pro-angiogenic factors (e.g., PLGF, HIF-1a and VEGF), increased blood vessel formation ($p < 0.05$) and enhancement of wound closure ($p < 0.01$) as compared to control dressings (without copper) or commercial wound dressings containing silver. In diabetic patients, who responded poorly to conventional wound healing treatments, their application resulted in wound closure. We will discuss the molecular mechanism by which copper oxide impregnated dressings stimulate wound healing.

Reactive Oxygen and Wounds- from the Laboratory to the Labour Ward

Jonathan Cooke MPharm, PhD, Visiting Professor in the Infectious Diseases and Immunity Section, Department of Medicine, Imperial College London, London, UK

Reactive Oxygen (RO) is a novel solution to controlling and eradicating bacteria. RO is rapidly active in-vitro against all Gram positive and Gram negative bacteria tested. RO also has some antifungal and antiviral properties. In addition, studies have demonstrated the ability of RO to prevent the formation of biofilms caused by a range of bacterial species in wounds and in respiratory epithelium. RO has been shown to be a simple and effective treatment for chronic wounds and clears multi-drug resistant organisms, including MRSA, and CPE Escherichia coli from wounds and vascular line sites. This has great potential for the control of bioburden and biofilm at these sites, thus providing an alternative to antibiotics on epithelial/mucosal surfaces. A controlled before and after study in patients undergoing Caesarean Section, RO demonstrated a 60% reduction in wound infection rates.

Mechanism of wound repair in gastrointestinal tract

Dr. Narendra Kumar, Associate Professor (Tenured), Department of Pharmaceutical Sciences, TX, USA

Understanding the communication between epithelial cells, immune cells, and microbial population of the gastrointestinal tract has immense implication in understanding the mechanism of various intestinal disorders such as Crohn's disease, ulcerative colitis, and low-grade inflammation mediated metabolic syndrome. Intestinal injury and wound repair plays a central role in the cross-talk between these entity. The talk will highlight the current understanding on the mechanism of gastrointestinal wound repair and their correlation with aforementioned diseases.

Extracellular PKM2 facilitates wound healing by promoting myofibroblast differentiation and angiogenesis

Dr Zhi-Ren Liu, Georgia State University, USA

We report here that the activated neutrophils at the wound site release PKM2, a glycolytic enzyme, by its secretive mechanisms during early stages of wound repair. The extracellular PKM2 facilitates wound healing by promoting early granulation and angiogenesis. PKM2 facilitates formation of early granulates by promoting fibroblast migration and myofibroblast differentiation. We demonstrated that extracellular PKM2 promotes myofibroblast differentiation by a TGF β independent pathway via activation of integrin α v β 3 signaling. Our studies reveal a new molecular linker between the early inflammation response and proliferation phase in wound healing process. Our studies also uncover a novel mechanism of promoting myofibroblast differentiation.

Biofilms: A Paradigm Shift in Wound Microbiology

Professor Steven Percival, 5D Health Protection Group Ltd and University of Liverpool, UK

Understanding the microbiology of chronic wounds requires further intensive research as the majority of studies undertaken to date have relied solely on data generated from agar culture-based technologies. Furthermore studies have rarely taken into account the more fastidious, slow-growing and unculturable microorganisms. Microorganisms found within a chronic wound environment exist in two phenotypic states, the free floating or planktonic phenotypic state, and the attached or sessile/biofilm phenotypic state. Despite this fact the majority of wound microbiology research has been carried out on microbes residing within the planktonic state. Biofilms are universal in chronic wounds and this virulent state is considered responsible for the recalcitrant nature of chronic wounds and the main reason that an infection occurs.

Exploiting inherited genetic models to dissect the STAT3/HIF1 α signalling axis, a key driver of cell migration and invasion

Dr Andrew R. Tee, Senior Lecturer in Cancer Genetics, Cardiff University, Cardiff, UK

We employ genetic models of Tuberous Sclerosis Complex (TSC) and Neurofibromatosis type 1 (NF1) to dissect cell signalling events linked to migration and invasion. TSC and NF1 are rare genetic disorders that predispose patients to tumours; we utilise them to better understand signalling events that are fundamentally involved in human disease. In both model systems, we uncover that signal transducer and activation of transcription 3 (STAT3) plays a critical role in not only tumour formation, but also for cell migration and invasion. We further demonstrate that cell migration and invasion through STAT3 are highly dependent on HIF signalling.

The role of the hair follicle in cutaneous wound healing

Dr M Julie Thornton, Centre for Skin Sciences, Faculty of Life Sciences, University of Bradford, Bradford, UK
Hair follicles are found in human skin with few exceptions. Discrete populations of mesenchymal and epithelial cells, they have striking regenerative properties, cycling throughout adult life recapitulating events of embryogenesis. During wound healing their reservoir of epidermal stem cells are recruited for re-epithelialization and mesenchymal cells for dermal repair. A greater understanding of the wound healing properties of hair follicle epithelial and mesenchymal subpopulations, together with an understanding of how the type of hair follicle may influence the dermal environment, may help in the development of skin substitutes for the treatment of chronic wounds and major burns.

Day 1:

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

MANAGEMENT OF DIABETIC FOOT HEALING: EXPERIENCE OF THE NATIONAL CENTRE OF BURNS AND PLASTIC SURGERY: MOROCCO

*Amine.RAFIK**, S.TAQUAFI, M.DIOURI, N.BAHECHAR, A.CHLIHI

National Centre of burns and plastic surgery: Morocco

Introduction

Diabetic foot is a major public health problem by the economic and social cost as of the high rate of amputations it spawns. The purpose of the work is to analyse the clinical and paraclinical factors related to amputations as well as short-term evolution

Materials and methods:

Through a retrospective study over 2 years (January 2012-January 2014) dealing with 27 patients supported at the national center of burn and plastic surgery to the CHU Ibn Rochd of Casablanca, having suffered a minor amputation or major injury of the foot.

Results

The average age of our patients is 53 years with a net dominance of the male. 70% of patients are patients with type I diabetes. With regard to the degenerative complications, 82% of our patients had neuropathic feet, 25% had a lower limb arteriopathy, and 64.5% of cases are complicated by nephropathy and 16.1% retinopathy. The main factor triggering the foot injury was especially mycotic infection (30%), followed by wounds and burns not felt. Individual lesions are found: phlegmon, evil puncturing Plantar, ischemic ulcer, complicated Erysipelas, and in 25% of cases, the patient consults at the stage of gangrene. Almost half of our patients (54.8%) have suffered major amputation. The evolution was favorable in 45% of the patients and 35% have necessitated a revision surgery

Conclusion

The reduction of the number of amputation through the awareness of practitioners to this problem and the urgency of its support as well as good monitoring and education of diabetes patients.

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BIOLOGICAL AND MICROBIOLOGICAL IMPACT OF PLASMA MEDICINE IN WOUND HEALING

Keith Cutting, Clinical Research Consultant, Hertfordshire, UK

Plasmas have been used for a long time in medicine to sterilise medical equipment and implants, and for use in electro-surgery (coagulation). Increasing interest is particularly being shown in the use of non-thermal gas plasma (NTGP) that uses a patented ionization chamber to emit energised argon gas. NTGP has been shown to be safe, well tolerated and effective; in a range of dermatological conditions, and in acute donor site wounds where it also promotes re-epithelialisation. NTGP has been shown to improve wound healing in vitro and in vivo.

The plasma species delivered to the wound bed includes reactive oxygen and nitrogen species, OH radicals, ions, electrons, and UV light photons that ensure reproducible therapeutic effects.

NTGP has bactericidal effect on Gram +ve and Gram -ve microbes, is effective against antibiotic resistant strains, and is anti-fungal and anti-viral. Anti-biofilm efficacy has been demonstrated in vitro and in an animal model of infected wounds. It is important to note; plasma effect is not temporary and that bacteria do not develop plasma resistance. During plasma treatment no thermal damage is caused, human blood is unaltered, treated human skin histology is unaltered, and there are no morphological changes to HeLa cells.

Day 2:

Oral Presentation Abstracts

RESULTS OF THE INTERIM ANALYSIS OF THE SAWHI-V.A.C.-STUDY

D Seidel, C Könen, R Lefering, E Neugebauer

Background: A decision of the Federal Joint Committee Germany states that negative pressure wound therapy is not accepted as a standard therapy with full reimbursement by health insurance companies in Germany. This decision is based on the reports of the Institute for Quality and Efficiency in Health Care, which demonstrated that an insufficient state of evidence regarding the use of negative pressure wound therapy (NPWT) for acute and chronic wounds exists. The aim of the SAWHI-V.A.C.®-study is to compare the clinical, safety and economic results of both treatment arms and to generate solid evidence regarding the effectiveness of NPWT.

Methods: The independent scientific Institute for Research in Operative Medicine as part of the University of Witten/Herdecke initiated a randomised controlled clinical trial to evaluate the effectiveness and safety of NPWT for the treatment of subcutaneous abdominal wound healing impairment after surgery compared with standard conventional wound therapy. The trial is financed and supported by the manufacturer Kinetic Concepts Incorporated (KCI / Acelity). After including 278 patients one planned interim analysis was performed to evaluate if there is a significant positive or negative effect for V.A.C.®-therapy and the trial should be stopped.

Results: Starting in August 2010 this multinational clinical trial showed despite all obstacles that the performance of randomised controlled clinical trials in wound healing is possible. In October 2014 the number of patients for the planned interim analysis was reached. At the timepoint of the interim analysis no superiority of one treatment arm was demonstrated for the primary endpoint time (number of days) to achieve complete, sustained and photo-verified wound closure. For the secondary endpoint wound closure rate the number of confirmed wound closures was higher in the V.A.C.® treatment group than in the standard conventional wound treatment group.

Conclusion: The recruitment continues. The final analysis of the trial will be performed after reaching the a priori calculated overall sample size of 550 patients to be analysed. Overall study results will be provided to contribute to the final decision of the Federal Joint Committee Germany regarding the general admission of negative pressure wound therapy as a standard performance within both medical sectors in Germany.

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SUB-MOLECULAR ASPECT OF TYROSINE KINASE MEDIATED MUCOSAL WOUND REPAIR

Jayshree Mishra, Narendra Kumar

Department of Pharmaceutical Sciences, Irma Lerma Rangel (ILR) College of Pharmacy, Texas A&M Health Science Center, Kingsville, Texas 78363, USA.

Introduction: Inflammatory bowel disease is characterized by a chronic inflammation of the intestinal mucosa. The mucosal epithelium of the gastrointestinal tract constitutes a key element of the mucosal barrier to a broad spectrum of deleterious substances present within the intestinal lumen including bacterial microorganisms, various dietary factors, gastrointestinal secretory products and drugs. Epithelial cells in the gastrointestinal mucosa play an important role in defining the physical barrier between the host and the external environment. This protection by intestinal epithelial cells is maintained by a highly dynamic and continuous cross-talk between the intestinal epithelial cells and the immune cells of the gastrointestinal tract. Previously, we demonstrate that intestinal epithelial cells express functionally specific Jak3, a potent non-receptor tyrosine

kinase and regulates IL 2 induced mucosal wound repair through tyrosine phosphorylation of an actin binding protein villin thereby facilitating cytoskeletal remodelling and wound repair. Here we determined the structural determinants that regulate the interactions between Jak3 and villin that has important implications in transplant biology, epithelial wound repair, cancer metastasis, and immune cell migration.

Method: Wild type or mutant Jak3 cDNAs cloned in pGEX-4T or p6X His-ET were expressed in Escherichia coli BL21 or TKX1 cells to get the non-phosphorylated and phosphorylated form of the Jak3 protein. In vitro kinase and pairwise binding assays were developed and kinetic parameters were determined. pCDNA-HA-Jak3-wt and pCDNA-HA-Jak3-V484* were stably transfected into the HT-29 CL19 A cells to determine the importance of Jak3 function in cell culture model.

Results: Recombinant Jak3 autophosphorylates itself and transphosphorylates the cytoskeletal Protein villin. P-Jak3-wt interacted with P-villin-wt in a dose-dependent manner with a Kd of 23 nm and a Hill's coefficient of 3.7. FERM Domain of Jak3 was found to be sufficient for the Interactions between Jak3 and Villin. Tyrosine Phosphorylation of Jak3-SH2 domain facilitated the interactions between villin and Jak3. Intramolecular Interactions between FERM and SH2 Domains of Jak3 prevented Jak3 Interactions with villin

Conclusion: Tyrosine phosphorylation of SH2 domain of Jak3 facilitated the interactions between the Jak3-FERM domain and cytoskeletal proteins and understanding of Jak3 functions has important implications in epithelial mucosal wound repair.

Day 3:

Oral Presentation Abstracts

Oral presentations will be added after the submission deadline

THE ROLE OF THE FIBROBLASTS AND TGF- β (Transforming Growth Factor beta) ON THE WOUND HEALING: HYPERTROFIC AND KELOID SCARS

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Fernando Schmitt ,MD,PhD,Professor of Pathology, Faculty of Medicine, University of Porto Researcher IPATIMUP Director of the Department of Medicine Laboratoire national de santé - Luxembourg

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ABSTRACT: Background: Understanding the normal sequence of wound healing is important before knowing the pathophysiology and treatment of keloids and hypertrophic scars. Individuals of all ethnic backgrounds can form keloid and hypertrophic scars as a familial predisposition was believed no exist. There are no clearly defined genetic loci conferring risk for keloids

Factors that are responsible for this are: Inflammation, fibrogenic response, genetics and hormonal factors. The fibrogenic response is the central to the formation of hypertrophic and keloid scar tissue is an alteration of the fibroblast phenotype. Indeed, when compared with normal fibroblasts, keloid fibroblasts show increase numbers of growth factor receptors and response more briskly to growth factor like TGF- β (Transforming Growth Factor beta),which may upregulate these abnormal cells from the beginning of wound healing.

Recent studies indicate that TGF- β play an integral role in the formation of keloids. TGF- β 1, TGF- β 2 and TGF- β 3, are three isoforms that exists. TGF- β 1 is thought to be profibrotic, whereas, TGF- β 3 may have anti-fibrotic functions. The overproduction of the subtype TGF- β 1 is associated with an excessive deposition of scar tissue and fibrosis. TGF- β modulates the expression of matrix metalloproteinase (MMPs) which is capable all the components of the extra cellular matrix and the basement membrane.

Objectives: To do an literature revision and update focused in the role of the fibroblasts and FGF- β , on the pathogenesis and molecular mechanisms, in the Hypertrophic and keloid scars healing wound.

To provide at physicians can better understand and properly treat such lesions.

Methods: A medicine literature search was performed for relevant publications and for diverse strategies for management of hypertrophic scars and keloids.

Conclusions: Elucidation of the molecular pathways leading to keloid formation will undoubtedly open up a host of opportunities. Recent studies indicate that TGF- β (Transforming Growth Factor beta) play an integral role in the formation of keloids. In the future, development of selective inhibitors of TGF- β might produce new therapeutic tools with enhance efficacy and specificity for the treatment of keloids.

The authors have indicated no significant interest with commercial supporters

ANALYSIS OF POLYMICROBIAL BIOFILM INFECTIONS IN NON HEALING DIABETIC ULCER

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Chronic diabetic ulcer is one of the major devastating complications of diabetes and precedes 84% of all diabetes-related lower-leg amputations. Such chronic infections are associated with bacterial burden which exist as biofilm communities. The biofilm phenotype infections which are highly resistant to antibiotics and host immune response are considered as primary hindrance to the healing of chronic wounds. In the present investigation, swabs and debridement samples were collected from chronic diabetic ulcer patients to study the nature and composition of bacteria in the wound infections. The bacterial diversity analysis by 16S rRNA gene sequencing revealed that *Pseudomonas aeruginosa* (40%), *Proteus* spp. (32%), *Enterococcus* spp. (30%) and *Staphylococcus* spp. (25%) are the predominant genera associated with the wound infections. Majority of the infections are polymicrobial in nature and 25 bacterial genera are consistently identified. Antibiotic profiling of these bacterial isolates unveiled that majority of them are multi-drug resistant which showed resistance to Penicillins, Fluorquinolones, Cephalosporins and even glycopeptides. Biofilm assay revealed that all the *Proteus* isolates (100%), *Enterococcus* isolates (96%), *Pseudomonas* isolates (91%) and *Staphylococcus* isolates (81%) are strong biofilm producers. The biofilm architecture and its thickness are evaluated by Confocal Laser Scanning Microscopy (CLSM) using LIVE/DEAD BacLight™ Bacterial Viability Kit. The occurrence and establishment of bacterial biofilm over chronic wound tissues is proved via Fluorescent in situ Hybridization (FISH) using 16SrRNA universal probes. The Scanning Electron Microscopy imaging also demonstrated the presence of biofilm aggregates over chronic wounds. The present study gives a clear picture of chronic wound pathogenic biofilms that inturn explains why chronic wounds does not heal despite adequate antibiotic treatment and it gives us new paths of research that may lead to new treatment strategies using biofilm inhibition.

Poster Presentation Abstracts

Poster abstracts will be finalised weeks before the event

ANALYSIS OF POLYMICROBIAL BIOFILM INFECTIONS IN NON HEALING DIABETIC ULCER

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pathogenic biofilms that in turn explains why chronic wounds does not heal despite adequate antibiotic treatment and it gives us new paths of research that may lead to new treatment strategies using biofilm inhibition.

EFFICACY OF FIBRIN RICH IN PLATELETS (L - PRF) ON WOUND HEALING.

*Amine RAFIK**, K. JOUHRI, M.DIOURI, N.BAHECHAR, A.CHLIHI

National Centre of burns and plastic surgery: Morocco

Introduction

Concentrate autologous platelets (PRP and L - PRF) are widely studied as a means of speeding up the healing without evidence of their effectiveness. Dental surgery clinical outcomes are very encouraging, but at the moment, there is no prospective, randomized study that evaluates their effectiveness on the healing of the skin. This clinical randomized controlled study evaluated the effectiveness of one of these concentrates, (L - PRF) platelet-rich fibrin, on skin healing

Materials and methods:

A National center of burns and plastic surgery in Morocco, Included patients were randomized in two groups, the group where the wound was covered with wireless and the control group where the wound was covered with fatty dressing according to the usual technique. The patients were followed for 2 months after their intervention with systematic photograph taken

Results

48 patients were included and randomized in the study (Group L - PRF 23 and 25-controlled group). The median time of healing for the Group L - PRF was 22 days (IQR 18-24) and for the Group control was 29 days (IQR 22-36) with a statistically significant difference. Bleeding, exudate and postoperative pain were always lower in L - PRF but without significant difference.

Conclusion

This study opens up interesting lines of research since the application of L - PRF can accelerate the healing of the surgical wound in a meaningful way with median improvement of 5 days.

ADIPOSE-DERIVED STEM CELLS: CHARACTERIZATION AND POTENTIAL FOR WOUND HEALING

*Amine RAFIK**, Samira TAQUAFI, Naima BAHECHAR, Abdessamad CHLIHI

Introduction :

The use of stem cells from adipose tissue or Adipose Derived Stem Cells (ASC) in regenerative medicine appears as an attractive alternative to cell strains of bone marrow because they are present in large quantities and obtained more easily. Human adipose derived mesenchymal stem cells are thought to be potential key factors for starting the regenerative process after tissue injury.

Material and methods :

In the National center of burns and plastic surgery, CHU Ibn-Rochd Casablanca, Morocco. A retrospective review of all patients admitted during 2011–2014, who developed Ulcer of the leg and was treated by lipofilling. Patient demographic data and digital photographs were taken on the day of surgery and every other day thereafter. Time to wound closure was defined as the time at which the wound bed was completely reepithelialized and filled with new tissue.

Results :

These patients had mean age of 24.3 years. Measurement of the healing time shows the effectiveness of the ASC of adipose on healing time as complete the closure wound obtained after 3 sessions of injection of 20cc ASC. Our results revealed that the average time for wound closure in the ASCs group was 13 ± 0.87 days whereas the time in the control group was 19 ± 0.61 days. Clinical applications of ASCs have begun to show early safety results and promising possibility of efficacy in patients with a range of diseases, including peripheral vascular disease, bony tissue defects. and skin wounds. These effects are importantly based on the secretion of trophic and survival factors by these cells and by their participations in the growth and remodeling of blood vessels.

Conclusion:

In conclusion, this study presented that accelerated wound healing could be achieved by local transplantation of autologous ASCs. Moreover, some clinical aspects of wound healing as well as the possibility of the therapy based on stem cells might represent a feasible therapeutic approach in treatment of clinical wounds.

THE CHRONIC WOUND: ASPECT CLINICAL AND EVOLUTIVE

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National Centre of burn and plastic surgery Casablanca, Morocco

Introduction:

Marjolin's ulcer is malignant degeneration of an inflammatory injury chronic. However, this term is often correlated with cancers occurring on burn scars because the unstable scar constituting the form conducive to the development of skin cancer.

Materials and methods:

The objective of our work is to describe the characters epidemiologic, therapeutic and prognostic of this pathology through the study of a series of 20 cases collected at the national center of burn and reconstructive surgery CHU IBN ROCHD CASABLANCA from 2010 to 2015 with review of the literature.

Results:

The average age of our patients is 54 years with male-dominated, these lesions most often grafted on initial Burns: deep and little extended having been left in spontaneous healing or received inadequate treatment with inadequate follow-up which will take the appearance of tumors Ulcer-burgeoning degenerative infected. In order of frequency were individualized 3 cases of axillary localization and the upper limb; 14 cases involving leg and the popliteal fossa. The time of onset ranged between ten and fifteen years in our patients. The positive diagnosis is based on biopsies - wide resection with pathological studies confirming ballistics malignancy having objectified through our series of squamous cell carcinomas with affected lymph node positive in more than 75% of cases with in other cases of Melanoma lesions or sarcoma. Our surgical treatment appealed to broad oncological resections with routine lymphadenectomy while means of coverage will be tattered initial mobilizations in 16 cases of flaps scapulars or fascio-cutaneous leg; skin graft with a last recourse to amputation in two cases. The prognosis is reserved with the possibility of recurrence or metastases.

Conclusion:

Skin cancers on scar burning remains a rare and increasingly observed complication in fasting treatment whatever aggressive must be early and well coded.

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BUBURNS WOUND HEALING; EPIDEMIOLOGY AND CLINICAL FEATURES

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INTRODUCTION

The diluent; chemical liquid (refined petroleum distillate containing aliphatic and aromatic hydrocarbons) normally used to dilute an already more or less liquid substance is a not uncommon cause of burns in our Moroccan context.

MATERIAL AND METHODE:

This work is a retrospective study over a period of 1 year (January 2015 - January 2015) who helped collect 18 cases of thermal burn flame by diluting a total of 400 cases of patients admitted for burns distinct agents. The average age of these patients is 30 years. They are almost all male low socioeconomic status and history of substance abuse and / or delinquency.

RESULT

The burn is often secondary to an assault in the street (90% of cases) or accidental in the context of drug abuse (8 % of cases) or psychosis (2% of cases) . Regarding the characteristics of the burn, the average burned skin surface is 25% ; it is often profound requiring skin grafting in all our patients in this series and especially seat at the front of the trunk and upper limbs. The lung damage if inhaled concerned 30% of patients in our series.

The thinner flames burn is a severe burn both general plan saw the risk of respiratory injury (acute respiratory distress, lesional pulmonary edema, pulmonary infection ...) on the local state; these being immediately deep burns are responsible for significant aesthetic and functional sequelae.

CONCLUSION

Preventing these burns through the regulation and control of the sale of the product and information about its dangers.

CLINICAL EFFICACY OF THE 830nm LED PHOTOTHERAPY FOR BURN PATIENTS

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Purpose: Phototherapy uses the changes caused by the athermal and atraumatic absorption of the photon's energy by the tissue for therapeutic effect. Phototherapy has been proven to be useful in various conditions, for example, in pain attenuation, wound healing and skin rejuvenation. The aim of this research was to evaluate the clinical efficacy of 830 nm LED phototherapy for burn patients.

Methods: We recruited 11 patients who visited this hospital between June and December 2012 with superficial 2nd degree burns to the face for comparative analysis. For phototherapy, we used infrared LED with wavelength of 830 nm. For comparative analysis, we covered one side of the face with sterile aluminum foil and fabric during the treatment. Photographs were taken at the time of each treatment and the time taken for epithelialization and the level of patient satisfaction were also investigated.

Results: All 11 patients were male and the mean age was 44.0 ± 11.9 years (range of 28-63 years). The cause of the burns was flame burn for 7 patients, and electric sparks in 4 patients. The time taken to achieve epithelialization after the burns was 8.1 ± 2.2 days (range 4-12 days) for the side that received phototherapy, while it was 9.1 ± 2.9 days (range 4-14 days) for the side that was not treated with phototherapy. In terms of patient satisfaction, 3 patients were 'Very Satisfied', 6 patients were 'Satisfied', 2 patients replied 'Adequate' and none of the patients were 'Unsatisfied'.

Conclusion: LED phototherapy of 830 nm wavelength can shorten the time taken for burn wound healing. It also was not associated with serious complications except for skin dryness, so it can be a useful treatment method for burns that produces satisfactory outcome for the patients.

BURN WOUND DRESSINGS- A REVIEW OF PEPTIDE HYDROGEL DRESSINGS.

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'One of the greatest medical needs is an ideal replacement or means of regenerating damaged skin.' (Larry Hench)

Wound healing is a global medical concern, in particular burns wound healing. Burns are among the leading causes of disability and, annually, 27 million burns occur that require professional treatment, and of these, 7 million require hospitalization.

Currently there is no universally accepted gold standard of burns dressing, however hydrogels dressings are widely used in the clinical setting. Hydrogels are a three dimensional networks of polymer chains that are water insoluble. They can be made from a number of different natural or synthetic materials. Peptide hydrogels are a type of natural hydrogel that have been successfully demonstrated to aid wound healing. These materials have an innate tendency to self- assemble into biomimetic scaffolds and have shown promise in clinical applications. The regenerative properties of these materials have been further enhanced by incorporation of bioactive agents such as growth factors.

We present a review of the use of peptides hydrogels in wound dressings, with a particular focus on novel short and ultrashort peptides. We discuss the properties of these materials and their successful clinical application in burns wound healing.

SKIN TISSUE REGENERATION - THE ROLE BIOENGINEERING AND ITS APPLICATION IN RECONSTRUCTIVE SURGERY.

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Bioengineering plays an essential role in plastic and reconstructive surgery. Recent advances in material science, tissue engineering and stem cell research have enabled the development of novel materials that assist in restoring the body's natural healing capacity.

Traditionally the gold standard of skin replacement is an autograft; however, over time, the shortage of suitable, natural tissue for reconstructive and plastic surgery has led to the bioengineering of a number of artificial skin substitutes. The focus is now on developing biomaterials that interact synergistically with their surroundings and promote the body's own regenerative capacities.

Skin substitutes have been developed, overtime, from early inert materials to advanced bioengineered, biologically active materials that are able to actively respond to the host and release a number of factors to aid wound healing. The successful use of artificial skin has had a positive impact on burn surgery and the treatment of chronic wounds.

We present a review of the development of bioengineering and the application of engineered skin constructs in burns and chronic wounds.

MODULATION INDUCED BY A NEW THIAZOLIDINE COMPOUND (GQ-11) IN WOUND HEALING ON TYPE 2 DIABETES ANIMAL MODEL

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INTRODUCTION: Thiazolidinediones (TZDs) comprise a class of hypoglycemic drugs which reduce insulin resistance in peripheral tissues, mediated by peroxisome proliferator-activated receptors (PPARs) activation. Recently, these drugs have been associated to important side effects, increasing the search for new thiazolidine compounds, which could share beneficial effects and minimize side effects were propelled.

AIMS: These studies aimed to observe wound healing modulation by a new thiazolidine compound - GQ-11 - treatment.

METHODS: MKR and FVB mice were anesthetized and subjected to excisional wounding with an 8 mm biopsy punch. Healthy tissue collected was stored to use as individual control. Topical treatment was initiated 3 days postinjury, by the groups: GQ-11 - new thiazolidine compound (2mM) and F-127 pluronic gel (vehicle) for 4 days. Wounds extracted were analysed by histology and qRT-PCR.

RESULTS/CONCLUSION: Our data showed that GQ-11 modulates cytokines with important role in inflammation processes. It was possible to observe modulation on M1 macrophages phenotype to M2 macrophages by topical treatment, balancing pro- and anti-inflammatory phases in wound healing inflammatory stage, downregulating TNF α and upregulating ARG-1 and IL-10, leading to tissue repair improvement and cell organization in diabetic mice. These results turn GQ-11 into a promising alternative on healing/ tissue repair therapy and treatment.

EXPRESSION OF ANTI-BACTERIAL WOUND HEALING AGENT LUCIFENSIN OF LUCILIA SERICATA AT DIFFERENT LIFE STAGES

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Lucilia sericata adult's colors are metallic green or bluish-green and 5-10mm in size. The most important medically feature of these flies is used maggot debridement treating. Egg, larvae, pupa and adult stages are available in life cycle of *L. sericata*. There are three main features of the larvae: to debride necrotic tissue, wound and provide disinfection and sterilization to stimulate wound healing. Life stage, especially the many molecules that are secreted from the larval stage is had function at maggot debridement therapy. Important compounds lucifensin, which have recently been identified in the medicinal larvae of the blowflies *L. sericata*. The immunomodulator functions and bactericidal role of lucifensin secreted into the infected wound by larvae during Maggot debridement treatment was known.

In this study, the level of lucifensin expression was investigate obtain from the eggs, larvae, pupa and adults of the *L. sericata* provided the continuity. Total RNA Isolation was made from larvae and synthesized cDNA of these total RNA was used for Real-Time PCR. The level of Lucifensin expression is low at egg stage while larvae, pupa and adult stages of *Lucilia sericata* were found to have high levels as ,32,31,28 Cp, respectively. according to data, we found the most increasing expression of lucifensin gene at adult stages. Further studies will be done with lucifensin in wound healing could contribute to new perspectives.

EXPRESSION OF LUCIMYCINE : A NOVEL ANTIFUNGAL WOUND HEALING AGENT AT LIFE STAGES OF LUCILICA SERICATA

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Lucilia sericata has been used for wound healing recently. *Lucilia sericata* which are used as therapeutic adult's colors are metallic bluish-green or green and about 10mm size. The most important medically feature of *Lucilia sericata* is to used for maggot debridement treating. Egg, larvae, pupa and adult stages are available in life cycle of *L. sericata*. Larvae are used for the Maggot debridement treatment. There are three main features of the larvae: to wound healing, debride necrotic tissue and provide sterilization and disinfection to stimulate wound healing. Life stage, especially the many molecules that are secreted from the larval stage is had function at maggot debridement therapy. One of the most important compounds lucimycin, which have recently been identified in the medicinal larvae of the blowflies *L. sericata*. The immunomodulator functions and anovel antifungal protein which composed 77 amino acid role of lucimycin secreted into the infected wound by larvae during Maggot debridement treatment was known. Lucimycin is active against fungus.

In this study, the level of lucimycin expression was investigate obtain from egg, larvae, pupa and adult stages *L. sericata*. Total RNA Isolation was made from larvae and synthesized cDNA of these total RNA was used for Real-Time PCR.

EXPRESSION OF LUCIMYCINE IS THE HIGHEST LEVEL AT THIRD STAGE LARVA. PUPA AND EGG ARE STABLE AND DECREASING ALONG ADULT STAGE.

Further studies will be done with lucimycin in wound healing could contribute to new perspectives.

Reconstructive Options on Traumatic Facial İnjuries

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The most cause of facial tissue defect is due to traffic accident. On the other hand, the gunshot wounds and burn injuries are commonly observed becasue of the war in Syria. Several different reconstructive technique are exist to repair these types defects. In this case report the injury on the facial region was extensively wide which can not be repaired by routine reconstructive method.

In our case, 9 year old girl had an approximately 40x30 cm broad tissue defect on left temporal region comprising the servical region after injured by gun fire during the war in Syria. And also the temporal bone was seen by eyes. The bone defect on the left temporal region was repaired by the pectoralis major myocutaneaus flap. The remained other wide tissue defect was repaired by STSG skin greft obtained from left femoral region.

In conclusion, the wound size and its location on the facial area limit the reconstructive approaches. This kind of cases who have wide tissue defects normally do not survive or have graft failure and infection on the graft side. Normally, the esthetic concern was ignored during the reconstructive approach to this kind of wide defects. In this case, we aimed to repair the defect area to obtain a best result in terms of functionality.

THE NATURE OF BETA-GLUCANS- AND THE ROLE IN WOUND CARE OF A NOVEL BIOACTIVE BETA-GLUCAN GEL – WOULGAN

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Aim: To explore the natural polymer Beta-Glucan (β -glucan) and how a novel bioactive Class III product 'Woulgan Bioactive Beta-Glucan Gel' offers a revolutionary new approach in the management of dry and low to moderately exuding dermal wounds.

Method: Literature search was undertaken using PubMed database to retrieve articles related to the; technical profile of β -glucan, mode of action, general relevance to healthcare and specific relevance to wound care.

Results / Discussion: β -glucans comprise a group of natural polymers typically found in the cell walls of yeasts, fungi and bacteria, but also in algae and grain. They have wide applications in healthcare including cancer, diabetes, hypercholesterolemia, metabolic syndrome and have a marked capacity to modulate the immune system. Central to the immuno-modulatory capability of β -glucan is the activation and recruitment of macrophages. Macrophages are important wound cleansers and debride the wound of devitalized tissue and dead neutrophils. Macrophages also express a range of growth factors and thereby support cellular proliferation, angiogenesis, deposition of ECM, promotion of re-epithelialisation, and increase in wound tensile strength. Woulgan, containing 2% soluble beta-glucan from yeast, is intended for use on dry, low to moderately exuding wounds that failed to progress under standard care within the preceding 4 weeks.

Conclusion: Woulgan Bioactive Beta-Glucan gel is a natural but technologically advanced polymer gel that has been prepared as a primary dressing for stalled wounds. Its immune modulating capability recruits macrophages to the wound bed where the resulting biochemical and cellular responses deliver an accelerated rate of wound closure.

SOY PROTEIN BASED HYDROGELS FOR WOUND HEALING

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Hydrogels are interesting soft based materials for wound healing applications owing to create moist environment by high water content. In this study, plant derived soy protein isolate which has less immunogenicity and proper degradability in comparison to animal derived proteins combined with naturally alginate hydrogel which has a long history in wound dressing applications. We hypothesized that soy protein can promote wound healing by its phytoestrogens. Moreover, for the angiogenesis properties the nano sized bioglasses were added to these hydrogels. The cell-material interaction in 2D was assessed by seeding mouse embryonic fibroblasts and human adult low calcium high temperature keratinocytes on alginate and alginate/soy protein isolate hydrogel films.

RECONSTRUCTIVE OPTIONS ON TRAUMATIC FACIAL INJURIES

Uçak M.¹, Ozkan B.²

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2. Erciyes Universty Department of Medical Parasitology Kayseri/TURKEY

ABSTRACT

The most cause of facial tissue defect is due to traffic accident. On the other hand, the gunshot wounds and burn injuries are commonly observed because of the war in Syria. Several different reconstructive technique are exist to repair these types defects. In this case report the injury on the facial region was extensively wide which can not be repaired by routine reconstructive method.

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