

P 121

The use of actico cohesive short stretch bandages in the management of lymphoedema

A.F. Williams

Independent Lymphoedema Practitioner/Lecturer, Edinburgh, United Kingdom

Introduction: Lymphoedema of the limb, due to a failure in lymph drainage is estimated to affect over 1.33 per 1,000 population (Moffatt et al 2003). The management of lymphoedema combines skin care, manual lymph drainage, exercises and application of inelastic bandages to reduce swelling and improve skin condition. Actico short stretch bandages provide a cohesive alternative to other inelastic bandages for use within the multi-layer lymphoedema bandaging system.

Methods: An audit was undertaken of Actico cohesive bandages used within a multi-layer bandaging system for patients with lymphoedema of the limb. The audit incorporated data on limb volume reduction, practitioner and patient evaluation of the bandaging system. Data on sub-bandage pressures were also collated.

Results: This poster presents the preliminary results from the audit. Case studies are included and are used to present further data on sub-bandage pressures with Actico bandages.

Discussion: The Actico bandage incorporated within a multi-layer bandaging system is an effective method for reducing lymphoedema and is well tolerated by patients. Issues for future practice and research are raised.

References:

Moffatt C, Franks PJ, Doherty DC, Williams AF, Badger C, Jeffs E, Bosanquet N, Mortimer PS (2003) Lymphoedema: an underestimated health problem. *Quarterly Journal of Medicine* 96: (10), 731-8.

P 123

Demonstration of the role of intimate contact in the microbial killing capacity of silver dressings

S. Jones, D. Parsons, P. Bowler, M. Walker

ConvaTec Wound Therapeutics GDC, Deeside, United Kingdom

Introduction: Dressing conformability to a wound surface is important as it minimises crevices where bacteria may proliferate. When a wound surface is exposed to silver-containing antimicrobial dressings it is important to ensure that there is intimate contact across the entire wound surface so that the bioburden at the wound interface is exposed to the antimicrobial agent.

Methods: These in vitro studies have investigated the conformability of two silver-containing wound dressings (a silver-containing Hydrofiber® dressing and a nanocrystalline silver-containing dressing with human wound tissue and dried human dermal membranes (simulation of burn eschar). The effect of these

dressings on methicillin resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa* - inoculated agar plates has also been investigated.

Results: In the human wound tissue and dried dermal membrane assays excellent dressing conformability was shown with the silver-containing Hydrofiber® dressing across the entire wound/simulated eschar surface, whereas with the nanocrystalline silver-containing dressing there were visible areas on non-conformability. In an inoculated, indented agar model minimal bacterial growth was observed beneath the silver-containing Hydrofiber dressing (< 10 %) whereas significant growth was observed beneath the nanocrystalline silver-containing dressing (>90 %).

Conclusions: These studies suggest that using the silver-containing Hydrofiber® dressing may provide more widespread antimicrobial protection at the wound surface-dressing interface.

Hydrofiber is a registered trademarks of E.R. Squibb & Sons, L.C.C. ConvaTec Wound Therapeutics is a trademark of E.R. Squibb & Sons, L.C.C.

P 124

The evaluation of efficiency of Hydrofiber® dressing with ionic silver Aquacel Ag® in the local treatment of burns

**M. Kazmierski¹, J. Puchala², A. Chrapusta-Klimeczek²,
P. Mankowski¹, A. Jankowski¹**

¹Poznan University of Medical Sciences, Department of Paediatric Surgery, Traumatology and Urology, Poznan, Poland,

²Reconstructive and Burns Surgery Department - Paediatric Burns Centre, University Children's Hospital, Krakow, Poland, Krakow, Poland

Modern treatment of burn wound should include application of active dressings. Aquacel Ag® is an active hydrofiber dressing containing ionic silver. It unites the advantages of hydrofiber technology and wide antimicrobial spectrum of silver. The dressing is applied in acute and chronic wounds, with the special focus on the complicated and infected wounds with high level of exudation. The authors present results of multicenter studies on efficiency of Aquacel Ag® in the local treatment of burns. The analyzed group consisted of 29 patients aged from 9 months to 70 years, treated for superficial and deep dermal partial thickness burn wounds in five different burn centers. The parameters of wound healing as well as patient reports were analyzed. Aquacel Ag® appeared to be useful, easy to apply and effective dressing for treatment of burn wounds, with the total reepithelialization rate 88,7 %, noticed throughout the two-weeks period of clinical study. It was also reported to decrease the pain level while every day patients' activities as well as during changing dressing procedures. Self-experiences as well as data from literature suggest, that Aquacel Ag® is very modern type of dressing and its application in the treatment of burns appears to be increasingly wide.

P 126

The challenges of randomised controlled trials in leg ulcers: A trial of larval therapy

P. Raynor, N. Cullum, VenUS II Team

University of York, York, United Kingdom

Introduction: This paper aims to describe the methodological and clinical challenges of undertaking a large multi-centre randomised controlled trial of larval therapy.

Methods: The trial plans to recruit 600 participants with venous or mixed aetiology, sloughy or necrotic leg ulcers. Participants are randomised to one of three treatments: hydrogel; bagged larvae; loose larvae for the debridement phase of the study; followed by knitted viscose dressings and appropriate compression therapy. Patients are followed up to complete ulcer healing or 12 months. The primary endpoint is time to complete healing of the reference ulcer; secondary endpoints include: proportion of patients free of ulcers; time to debridement; rate of healing; infection; bacterial load; quality of life; cost of treatment; attitudes and beliefs of staff and patients.

Results: Thus far 98 patients have been recruited across 10 participating sites. Very few patients appear to be averse to larval therapy. Challenges to undertaking the study include (during design) identifying an appropriate comparison, type of wound and primary endpoint; (during recruitment) slow recruitment, fragmentation of leg ulcer care, frequent reassessment required in order to identify times at which debridement and healing occur, the need for independent validation of the endpoint, the need for frequent wound swabs and photography. More sites are currently being recruited in an attempt to overcome slow recruitment.

Conclusions: Rigorous randomised controlled trials are lacking in wound care generally and larval therapy specifically however they are expensive, methodologically and logistically challenging to undertake. Whilst such trials have many challenges, most of these can be overcome and successful strategies will be discussed.

P 127

The role of cadexomer iodine in difficult-to-heal ulcers

R. Polignano¹, P. Terriaca¹, A. Pavanelli¹, S. Rowan²

¹Cardio-vascular Rehabilitation Department, ASL10, Florence, Italy, Florence, Italy,

²Smith + Nephew, Florence, Italy, Florence, Italy

Introduction: The clinical efficacy of antiseptics in the management of infected wounds has been challenged by a number of experimental studies. The possibility that non-toxic levels of iodine have potentially beneficial bio-activity was raised by in vitro studies reported by Keith Moore (Cardiff, UK). Dr. Moore reported that 0.25 % cadexomer iodine (0.00225 % iodine) enhanced the production of tumour necrosis factor (TNF- α) from macro-

phages co-stimulated with suboptimal levels of bacterial lipopolysaccharide. This effect was not seen with the addition of cadexomer carrier alone, indicating that the effect was mediated by the iodine component. AIM The aim of the study was to evaluate the efficacy of cadexomer iodine in infected ulcers of different etiologies, which had failed to respond to previous treatments.

Materials and methods: For each patient, the observation period extended until inflammation subsided, granulation tissue was present and another treatment modality was indicated. Of the six patients, two were males and four females; age range: 42–82. All wounds were critically colonised. Wound cultures were positive for *Pseudomonas aeruginosa* and *Staphylococcus aureus*. The different etiologies included: arterial, diabetic and mixed etiology. Ulcer size varied from 9 cm² to 35 cm². Patients were treated unsuccessfully for a period of 6 months. Previous treatment had included systemic antibiotics in combination with various products, such as hydrofiber dressings, alginates, hydrogels and silver sulfadiazine. Patients reported increased pain and the ulcers were covered by 90 % non-viable tissue. The Iodo-sorb dressing was covered with gauze; dressing changes were carried out two or three times a week. Patients were treated on an out-patient basis and weekly wound assessments were documented in a questionnaire.

Results: The mean non-viable tissue at the end of the study was 17 %. The wounds did not show any clinical signs of infection at the end of the study, as confirmed by lab cultures. A different treatment strategy was adopted once the wound had improved; this latter treatment consisted of skin grafts or other advanced dressings. The treatment did not present any side effects, with the exception of temporary pain in 4 patients.

Conclusions: The treatment was shown to be cost effective. The results obtained with the above-described treatment suggest that cadexomer acts as a carrier for iodine, enabling its transportation into the deeper layers of the tissue. The combination of the enhanced debridement and the sustained local activity of cadexomer iodine may explain the results.

P 128

Ablation of the aberrant monotopic focus for permanent monoformic focal sine tachycardia and its complications

J. Stryja¹, D. Ōíha², J. Branny³, J. Matloch³

¹Hospital Podlesi Trinec, Centre of vascular and miniinvasive surgery, Trinec, Czech Republic,

²Hospital Podlesi Trinec, Centre of vascular and miniinvasive surgery, Trinec, Czech Republic,

³Hospital Podlesi Trinec, Trinec, Czech Republic

Aim: We present necessity of using modern methods of treatment infected postoperative wounds and next complications on the case study 80 years old man.

Methods: Ablation of the aberrant monotopic focus tapping femoral vein in the patient suffer from permanent monoformic focal sine tachycardia can be complicated in many ways. We

underline necessity of the complex view on treatment eventuating in survival and recovery serious diseased person. We had to operate on him several times, restore damaged femoral artery and dress the wound in the left groin and the sacral bedsore. He was imperiled with haemorrhagic shock because of bleeding from femoral vein and artery, and with sepsis, even so he went home after 68 days in total good condition. Undergone complications: Bleeding from the femoral vein after taping – haematoma in the left groin – infected wound. Haemorrhagic shock and sepsis. Repeated bleeding from the femoral artery aneurysm due to infection. Strangulated groin hernia – operation – resection of the necrotic bowel, anastomosis Sacral bedsore

Results: moist environment, debridement, wound trimmed with Nu-Gel and Actisorb plus, repeated reparation of the arterial wall (sutura + myoplasty, angioplasty with venous wall), antibiotics and local therapy with Garamycine foam healed the infection and saved patients leg and life.

Conclusions: be careful to recognise and to prevent possible complications after any miniinvasive cardiovascular exploration.

P 129

Influence of irradiation on the binding capacity of bovine collagen for inflammatory proteases

Einfluss von Strahlensterilisation auf das Bindungsverhalten von bovinem Kollagen für entzündungsfördernde Proteasen

C. Wiegand¹, M. Abel², P. Elsner¹, P. Ruth², U.-C. Hipler¹

¹Friedrich Schiller University, Department of Dermatology, Jena, Germany,

²Lohmann & Rauscher GmbH & Co KG, Rengsdorf, Germany

Introduction: In contrast to physiological wound healing chronic wounds are very often characterized by elevated levels of proteolytic enzymes like matrix metalloproteinases (MMPs) and neutrophilic elastase. Therefore the reduction of these protease concentrations seems to be a suitable way to promote normal wound-healing. The aim of this study was to investigate the binding capacity of the native as well as β - or γ -irradiated (maximum dose of 20 kGy) wound dressing Suprasorb® C containing bovine collagen for neutrophil elastase, MMP-2 and MMP-13.

Materials & methods: The wound dressing samples were cut into equal pieces. Each specimen was taken in a final volume of 1 ml of protease solution and the samples were incubated up to 24 h at 37 °C on a plate mixer. The concentrations of unbound proteases in the supernatants were determined by means of specific ELISAs (neutrophil elastase ELISA from milena biotec, Bad Nauheim, Deutschland and Quantikine Immunoassays for pro-MMP-13 and MMP-2 from R&D Systems, Minneapolis, USA, respectively).

Results: The native bovine collagen from Suprasorb® C is able to bind neutrophil elastase. Already after 1 h a significant ($p < 0,05$) decrease of the elastase concentration was observed. The wound dressings treated with β - or γ -irradiation were also able to bind significant ($p < 0,01$) amounts of elastase over the

examined period. Similarly a significant ($p < 0,01$) decrease of the MMP-2 concentration by native and irradiated bovine collagen was observed.

Conclusions: Suprasorb® C is able to bind proteases at different rates. In particular, it has a considerable binding capacity for neutrophil elastase and MMP-2. Therefore it should be able to establish a physiological environment in chronic wounds and promote healing. Irradiation is used to sterilise materials, but can influence the characteristics of bio molecules like collagen fibres. In this study was shown that β - or γ -irradiation of bovine collagen up to a maximum of 20 kGy has no influence on the binding affinity for neutrophil elastase and MMP-2.

Einführung: Im Gegensatz zur physiologischen Wundheilung überwiegen bei chronischen Wunden die destruktiven Prozesse. Der Gehalt an entzündungsfördernden Proteasen, wie Matrixmetalloproteinasen (MMPs) und neutrophiler Elastase (PMN-Elastase) ist oft erhöht. Die Bindung der proteolytischen Enzyme stellt daher eine Möglichkeit dar, das Wundmilieu in Richtung eines physiologischen Heilungsprozesses wieder zu verschieben. Ziel der vorgestellten Untersuchung war es, das Bindungsvermögen des nativen sowie mit β - bzw. γ -Strahlung (Maximaldosis 20 kGy) behandelten Kollagen-Wundverbandes Suprasorb® C für PMN-Elastase, MMP-2 und MMP-13 zu testen.

Material & Methode: Aus den Wundverbänden wurden Stücke ausgestanzt und mit jeweils 1 ml Proteaselösung bis zu 24 h bei 37 °C inkubiert. Im Überstand wurde anschließend die Konzentration der ungebundenen Proteasen mittels ELISAs (PMN-Elastase ELISA von milena biotec, Bad Nauheim, Deutschland bzw. Quantikine Immunoassays für pro-MMP-13 und MMP-2 von R&D Systems, Minneapolis, USA) bestimmt.

Ergebnisse: Unsere Ergebnisse belegen, dass die Konzentration der PMN-Elastase in der untersuchten Enzymlyösung mit zunehmender Inkubationszeit abnimmt. Bereits nach 1 h ist die Konzentrationsabnahme von PMN-Elastase in Lösung für das native Kollagen aus dem Suprasorb® C Wundverband signifikant ($p < 0,05$). Die mit β - oder γ -Strahlung behandelten Kollagenproben waren ebenfalls in der Lage, über den untersuchten Zeitraum von 24 h PMN-Elastase signifikant ($p < 0,01$) zu binden. Ebenso konnte die Konzentration an MMP-2 signifikant ($p < 0,01$) gesenkt werden.

Diskussion: Suprasorb® C besitzt ein hohes Bindungsvermögen für PMN-Elastase und MMP-2 und kann damit das Wundmilieu chronischer Wunden verbessern. Behandlung mit β - bzw. γ -Strahlung wird zur Sterilisation von Materialien angewendet, kann aber besonders bei Biomolekülen, wie den Kollagenfasern, zu Veränderungen der Eigenschaften führen. In den Versuchen konnte gezeigt werden, dass durch β - oder γ -Bestrahlung des Kollagen-Wundverbandes bis zur Maximaldosis von 20 kGy das Bindungsvermögen für PMN-Elastase und MMP-2 nicht zerstört wird.

P 130

Evaluation of the antimicrobial properties, silver release profile & absorbency characteristics of an antimicrobial silver hydroalginate wound dressing

D. Addison, T. Rennison, M. del Bono, S. Stephens, S. Boothman

Johnson & Johnson Wound Management, Gargrave, United Kingdom

Purpose/Rational: Simulated in-use tests were developed to determine the silver ion release, the antimicrobial properties and the fluid handling properties of an antimicrobial silver alginate, carboxymethylcellulose dressing.

Methods: Three test methods were utilised: 1) Atomic absorption to determine silver ion release in simulated wound fluid, 2) A log reduction test that exposes a small sample of dressing against a high bacterial loaded broth and 3) Total Fluid Handling was determined in conjunction with secondary dressing in a Paddington Cup method.

Results: The results shows that in simulated prolonged use conditions that the silver ion release for the product is sustained and consistent. After prolonged contact with replenished wound fluid, the dressing continues to exert an antimicrobial effect. The fluid handling results demonstrate the ability of dressings to manage high levels of exudates.

Conclusions: The antimicrobial alginate dressing in simulated in-use tests has demonstrated sustained and consistent silver ion release in simulated wound fluid over a specified time period. The log reduction in-vitro microbiology testing that followed the prolonged simulated in-use test shows that the dressing is effective at reducing the number of viable bacteria within the broth. The in-vitro fluid handling properties in conjunction with a secondary dressing demonstrate the compatibility with the semi-permeable dressing and the ability to manage exudates.

P 131

The application of wound bed preparation as a framework for managing a diabetic foot – a case study.

R.C. Raúl¹, M.P.M. De Lourdes²

¹Hospital General de México., Mexico City, Mexico,

²Smith & Nephew Wound Management - Mexico, Mexico City, Mexico

Introduction: A case study of a thirty one year old female who presented a diabetic foot wound that compromised the whole foot and secondary severe metabolic disorder. The plan of care established by the surgery service was a below the knee amputation of the limb. The patient refused this treatment and so she was referred to our wound clinic. The aim was to demonstrate that the wound bed preparation framework is a good option for local treatment of complicated wound management.

Material and methods: The wound bed preparation framework was utilised in an attempt to salvage the lower limb of the patient. Methods for wound assessment (Doppler ultrasound and angiography) were established and the healability of the limb was assessed. Local advanced wound care was applied, taking into account the four elements of wound bed preparation (T.I.M.E.)‡

Tissue – non viable or deficient

Infection / Inflammation

Moisture imbalance

Edge of wound – non advancing or undermined

By taking TIME into consideration, it was possible to select the appropriate advanced wound care products. Such products included – hydrogels, (INTRASITE™ Gel), antimicrobial dressings (ACTICOAT™) and moisture balancing dressings (ALGISITE™ M).

The patient was assessed every three days for the first two months, every week for the next two months and every 15 days for the last month. At every visit, the treatment was re-evaluated as the wound healing progressed.

Results: The closure of the wound was achieved after 5 months of appropriate local treatment. This case study demonstrated that the amputation of a limb was not necessary after consideration of the wound bed preparation framework and the subsequent application of advanced wound care on a diabetic foot wound.

Conclusions: The wound bed preparation framework is easy to follow and can lead to great results for patients. Use of this framework and the application of appropriate advanced wound care could mean the difference between the amputation or salvaging of limbs.

™Trademarks of Smith & Nephew ‡ TIME is courtesy of the International Advisory Board on Wound Bed Preparation Schultz GS, Sibbald RG, Falanga V et al (2003) Wound Rep Reg; 11:1-28

P 132

Evaluating the effectiveness of flexiseal: A faecal management system

A. Johnstone

Greater Glasgow Health Board North Division, Tissue Viability Department Glasgow Royal Infirmary, Glasgow, United Kingdom

Aims: Excessive moisture in an incontinent patient comes from several sources. Faecal incontinence causes more irritation to the perineal skin than urinary incontinence because faeces contain bacteria and digestive enzymes that damage the skin. Patients with incontinence are at risk of moisture lesions which will increase their susceptibility to infection, pressure ulceration (Gray et al 2002). Skin injury by faecal incontinence can occur within minutes of onset (Faria et al 1996). A new faecal management system (FMS) has been developed to assist clinicians to prevent or manage this clinical problem. This paper reports the outcome of the use of a (FMS).

Methods: A patient with faecal incontinence and subsequent skin excoriation had the faecal management system applied. The main outcomes we assessed were:

- Resolution of skin excoriation
- Patient comfort
- Ease of application

Results: Perineal dermatitis caused by faecal incontinence was reduced after only 48 hours from insertion of the (FMS). The system allowed for better observation of skin integrity and prevented additional exposure to damaging irritants and bacteria to establish a local environment conducive to healing. The soft, flexible catheter was easily inserted with no discomfort to the patient. It gently conformed to the rectal vault, reducing risk of necrosis unlike rectal tubes which are associated with perforation and sphincter damage (Convatec 2003) There were additional psychological benefits to the patient including decrease in emotional trauma and embarrassment, with an increase in physical comfort and dignity

Discussion: In this cohort of patients, Flexi-seal was successful in diverting faecal fluid away from the peri-anal tissue and dermatitis with excoriation was resolved resulting in reduced nursing time. Our patient found the device comfortable and application was simple as reported by all clinicians. This device may represent a significant new cost-effective development in the care of faecally incontinent patients.

References:

- Convatec (2003)** FMS cost-effective survey Data on File, Convatec.
Gray M, Ratcliff C, Donovan A (2002) Perineal Skin Care for the Incontinent Patient. *Advances in Skin and Wound Care* 15, 4, 170-175
Faria DT, Shwayder T, Krull EA (1996) Perineal skin Injury: extrinsic environmental factors. *Ostomy Wound Management* 42, 7, 28-34

P 134

Wound healing in pressure-related deep tissue injury under intact skin in a rat model

**J. Sugama¹, H. Sanada², T. Nakatani¹, M. Okuwa¹,
A. Kitagawa², A. Mawaki¹, K. Fujii¹**

¹Department of Clinical Nursing, graduate school of Medical Sciences, Kanazawa University, Kanazawa, Japan,

²Division of Health Sciences and Nursing, Graduate School of Medicine, the University of Tokyo, Tokyo, Japan

Aim: Pressure-related deep tissue injury under intact skin (PDTI) is commonly recognized as Stage I (NPUAP staging system), because there is no loss of epidermis. PDTIs can have several potential outcomes: healing without ulceration or development of Stage II, III, or IV pressure ulcers. Understanding the pathophysiology of PDTIs is useful to prevent the ulcer development; however, the natural history of PDTIs has not been described. Therefore, this study aimed to clarify the healing process of PDTI.

Methods: To prepare PDTIs, 8 Kg of pressure was applied for 6 hours to the flank region of 8 rats. Wounds were observed for two weeks, and histological tissue sections were prepared on days 1, 3, 7, and 14. Samples were stained with hematoxylin and eosin. Anti- α -smooth muscle actin antibody was also used to specifically identify myofibroblasts.

Results: 1. Macroscopic findings At 30 minutes after pressure application, a dark red round area matching the compressed

area was seen. By day 1 this area had turned white, and on day 3 the white area had turned pink. By day 7, the pink area had turned white, and by day 14, the entire compressed area had become white. 2. Microscopic findings Up to day 3, the epidermis was absent, but by day 7, the wound was covered by thickened epidermis. In the dermal layer, on day 1, follicular necrosis, vasodilatation, and erythrocyte extravasation were observed; however, throughout the observation period, the alignment of collagen was normal. In the subcutaneous layer, extensive necrosis and vasodilatation were seen up to day 3. Inflammatory cell infiltration was observed starting on day 1 but was most notable on day 7 when numerous fibroblasts and collagen were observed. Abundant neoangiogenesis was not. In the abdominal muscle layer, histological damage was marked on day 3 and began to improve after day 7. Some myofibroblasts were observed in the subcutaneous layer on days 7 and 14.

Discussion: In the proliferative phase, PDTIs were characterized by sparse neoangiogenesis and myofibroblasts, which contrast with full-thickness wounds. These specific findings may be related to the normal alignment of collagen of the dermis.

P 135

The management of hypertrophic scars with a topical silicone gel

C. Morris

North East Wales NHS Trust, Wrexham, United Kingdom

Introduction: Silicone gel sheets have been used in the management of scars for many years even though the mechanism of action remains unclear. Silicone gel sheets however have a number of disadvantages such as

- The need to acclimatise the skin to the gel sheet
- The need to wash the skin frequently and the gel sheet
- Difficulties in fixing the gel sheets in awkward areas
- The appearance of the gel sheet in visible areas

This poster looks at 2 patients with hypertrophic scars and 1 for scar prevention and their management using Dermatix, a 15 gram tube of silicone gel. Dermatix is a topical silicone gel that is transparent, self-drying and maintains the skin's moisture balance, while aiding the management of scar tissue. Dermatix has been shown to

- Flatten, soften and smooth scars
- Relieve itching and discomfort
- Reduce discoloration
- Prevent scar formation

Methods: 3 patients were commenced on silicone gel treatment and their progress monitored using a case report form. The case report form began with data about the scar such as origin of scar, age of scar, wound healing progress, classification of scar, location of scar dimensions of scar and impairment of the patient. Treatment was monitored at 1,2,3, and 4 months duration of treatment. Photographs were taken at the beginning and end of treatment. An evaluation was made by the Tissue Viability Advisor and the patient and included redness, elevation, hardness, itching and tenderness or pain. Efficacy and tolerability were also reported.

Conclusions: All 3 patients reported a considerable improvement in their scars. Both patients with hypertrophic scars noted particular improvement with the itching and other sensations reported. The patient using Dermatrix preventatively noted excellent cosmetic recovery with respect to redness, itching elevation hardness and tenderness.

P 136

The efficacy of silver dressings against biofilm bacteria

S.L. Percival, P. Bowler, J. Dolman

ConvaTec Wound Therapeutics, Deeside, United Kingdom

Aim: The current study aimed to determine the antimicrobial activity of two silver dressings, AQUACEL® Ag (ConvaTec) and Acticoat™ (Smith and Nephew), on both aerobic and anaerobic microorganisms grown in a novel biofilm model.

Methods: A wide variety of both aerobic and anaerobic bacteria (including antibiotic-resistant strains) and yeasts known to be associated with wound colonization and infection were included in the study. The antimicrobial dressings under investigation included Acticoat™ and AQUACEL® Ag. In this study poloxamer hydrogels were used to develop a biofilm 'wound' model. Overnight cultures of clinical isolates were prepared in Maximal Recovery Diluent (MRD; Laboratory M, Bury, UK) at a concentration of approximately 1×10^5 colony forming units/ml. 1 ml volumes of each organism were inoculated onto the surface of both a Mueller-Hinton (MH) agar and a poloxamer gel plate. 2 cm diameter circular sections of dressings were aseptically cut from AQUACEL® (control), AQUACEL® Ag and Acticoat™. One circle of each dressing type was placed onto each MH agar and poloxamer gel plates and pressed down to ensure close contact. All plates were incubated at 35 °C for 24 h. Following a period of 24 h incubation all MH and poloxamer gel plates were observed to determine the antimicrobial activity of the dressing and measure the zones of inhibition around each sample.

Results: The results from this study show that overall, AQUACEL® Ag demonstrated greater anti-biofilm activities than Acticoat™, in the in vitro model, against a wide spectrum of microorganisms. This effect may have been associated with the physico-chemical properties of AQUACEL® Ag i.e. good conformability and sustained availability of silver ions.

Discussion: It is becoming more evident that complex microbial communities living within biofilms may contribute to delayed wound healing. Antimicrobial dressings such as those containing silver are being used increasingly to control wound bio-burden in the dressing and tests to demonstrate their efficacy predominantly involve in vitro models using free living or planktonic bacteria. However, with the increasing concerns over the role of biofilm bacteria, it is more appropriate to test the efficacy of topical antimicrobial agents against these more physically resistant forms. AQUACEL® Ag and ConvaTec Wound Therapeutics™ are trademarks of E.R. Squibb and Sons, L.L.C. All other trademarks are the property of their respective owners.

P 137

Venous leg ulcer patients and quality of life – measured by NHP among Finnish patients

S.M. Seppänen¹, A. Iivanainen²

¹Oulu Polytechnic, Oulainen, Finland,

²Mikkeli Polytechnic, Mikkeli, Finland

Venous leg ulcer is a chronic disease, which has characteristics of poor rates of healing and high rates of re-ulceration. The previous studies in UK, Sweden and USA shows, that venous leg ulcer affects to patients daily activities causing problems in mobility, social contacts and role activities. In Finland is estimated to be 15 000 people who suffers from venous leg ulcers. The impact of venous leg ulcer to the patients' quality of life has not been studied among the Finnish patients. The aim of study was to describe quality of life of venous leg ulcer patients in Finland. The data were collected by Nottingham Health Profile, which includes 38 propositions within 6 items; energy, sleep, pain, emotions, social isolation and mobility. The pain was assessed by numeric scale (0-10). The data was collected in years 2003-2004 and analysed by SPSS 11.0. In the study participated 88 venous leg ulcer patients, 75 % percent were female. 80% of the patients were over 65-years old. 73 % of them coped with daily activities independently or with minor help. All the patients had venous insufficiency and 85 of them had many episodes of venous leg ulcers. 74 of patients had an ulcer or ulcers in the moment of study. In the numeric pain scale 60 % of patients asses their pain level three or more. In NHP maximum is 100 score/item. The higher the score is the worse impact it has to the quality of life. While the scores of venous leg ulcer patients were compared to the general scores among the Finnish population it showed that venous leg ulcers patients' quality of life had biggest difference to healthy population in score values of mobility, social isolation and pain. According to the results health professionals should assess the quality of life of venous leg ulcer patients. Especially the attention should be taken to patient's ability to move and continue social life. Also the management of pain needs to be taken into the consideration. The results of this study are similar as the studies in UK, Sweden and USA. It can be suggested that problems related to venous leg ulcer patient's quality of life are similar in different countries.

P 138

Open label pilot study of prolonged release nanocrystalline silver dressing (Acticoat 7): reduction of bacterial burden treatment in the treatment of chronic venous leg ulcers

R.G. Sibbald¹, J. Contreras-Ruiz², P. Coutts², M. Fierheller²,
D. Queen²

¹University of Toronto, Toronto, Canada,

²Toronto Wound Healing Centres, Toronto, Canada

Background: In persons with venous ulcers and an absence of arterial disease, high compression as exemplified by the four layer bandage (Profore) has been demonstrated to be effective by a meta-analysis of existing studies. Despite optimized compression, some venous ulcers do not heal at the expected rate and persistent inflammation or infection may delay or prevent healing.

Objectives & methods: Patients with venous ulcers of greater than 4 weeks duration were treated with a prolonged release absorptive nanocrystalline silver dressing (Acticoat 7) under a four layer bandage (Profore) for 12 weeks, or until healing. The primary efficacy objective measured the effect of the silver dressing (Acticoat 7) on the wound microflora. Biopsies of the wounds were taken at baseline and after treatment with the silver dressing (Acticoat 7) and were analyzed for the bacterial species and number of bacteria present. In addition, serum silver levels were assessed.

Results: A total of 15 patients (9 male, and 6 female) were enrolled into the study. The median age was 63 years (range 30–83 years). The median duration of current ulceration was 17.3 weeks (range 4 weeks to 11 years) and the median ulcer area was 4.8 cm² (range 1.8–43.9 cm²). The median exposure to Acticoat 7 was 82 days (range 8–86 days). There was a statistically significant reduction ($p = 0.0114$) in the log₁₀ (total bacterial count) between the baseline and final biopsies (median 4.48 and 3.00, respectively). Four patients healed, 8 patients continued to the end of the 12-week study period and three patients were discontinued early. Of those patients who did not heal, 4 had more than a 94 % reduction in wound area by the end of the 12-week study period. For all patients, the median percentage reduction in ulcer area was 94.4 % and the median final ulcer area was 0.4 cm². Statistical analysis showed a significant increase ($p = 0.054$) in serum silver concentration during the treatment period. Although this small increase was observed it was not considered clinically significant given the literature baseline ranges of normal serum silver concentration (0.3 µg/L – 1.08 µg/L), and the lack of signs of silver toxicity in this study.

P 139

Effects of a silver Hydrofiber® dressing on the quantitative bacterial burden, reduction in ulcer size and exudate of chronic wounds with increased exudate and /or increased periwound temperature.

R.G. Sibbald¹, J. Contreras-Ruiz², A. Rothman³, P. Coutts²,
D. Queen²

¹University of Toronto, Toronto, Canada,

²Toronto Wound Healing Centres, Toronto, Canada,

³University of Toronto, Continuing Medical Education, Toronto, Canada

Background: Often chronic wounds have an increased bacterial burden that can impair healing without the classical clinical signs of infection. Silver dressings may provide an alternative topical method to control bacterial burden.

Objectives: The primary aim of this study was to evaluate the effect of 2-4 weeks therapy with the Silver Containing Hydrofiber® dressing on quantitative bacterial burden and clinical improvement in chronic wounds not healing at the expected rate.

Study Design: This was a single centre, four-armed study which included a total of 30 patients with diabetic foot ulcers, leg ulcers, pressure ulcers and miscellaneous wounds that did not fit into any of the above categories. Patients had a baseline quantitative bacterial biopsy, repeated at weeks 2 to 4. This was followed by wound assessment and application of silver containing hydrofiber® dressing.

Results: There was a significant delay in healing of the leg ulcers associated with increased bacterial burden in the quantitative biopsy bacterial burden results at week 0 and healing at week 2. ($p = 0.01$). Other subgroups had a similar association that did not reach statistical significance. The presence of an increased exudate in the leg ulcers at week two was associated with delayed healing at week 4 ($p = 0.05$). There was also a significant increase in skin surface temperature of the surrounding skin with an increased quantitative bacterial biopsy of the deep wound compartment for venous, diabetic neurotrophic foot ulcers and pressure ulcers with p values of 0.05, 0.01 and 0.01 respectively. There was no significant decrease in exudate or increased healing of the wounds with the application of the silver hydrofiber dressing in this difficult to heal population

Conclusions: The patients in this study differ from the previous studied superficial compartment increased bacterial burden population that demonstrated a 62 % improvement rate with the silver dressing. The population studied in this case series had increased bacterial burden in the deep compartment as measured with increased exudate and or an increased temperature of the periwound skin. These patients have an increased bacterial burden in the deep wound compartment that does not respond to topical ionized silver in the dressing studied.

P 140

Validation of the Braden Q scale for the Portuguese paediatric population

C. Ladeiro, A. Matias, A. Miranda, C. Silva, L. Silva, M. Carlos, C. Batista, H. Nunes, A. Rigueira, L. Carvalho, M. Capaz, J. Fidalgo, G. Trindade, A. Ferreira, C. Miguéns

Paediatric Hospital of Coimbra,, GAIF, Coimbra, Portugal

As a consequence of rising numbers of children with chronic disorders, a higher probability of pressure ulcer development is likely. However, until the recent past, risk assessment for pressure ulcers in children was not possible due lack of research in this area and as such we do not have significant data concerning this issue. As few studies exist regarding the prevalence and incidence of pressure ulcers in the paediatric population, the authors are carrying out a study using the Braden Q Scale in order to validate this scale in the portuguese paediatric population.

Methods: The GAIF in association with Coimbra's Paediatric Hospital collecting data about this subject: Three distinct phases were outlined in order to analyse the data gathered.

First phase: the hospital created a working group consisting of nurses from various wards who had received training regarding the prevention and treatment of pressure ulcers; this group developed guidelines for the prevention and treatment of pressure ulcers to be used in the hospital;

Second phase: a group coordinator was responsible for the training of other ward nurses as regards the development of pressure ulcers and the application of the Braden Q Scale and the Skin Assessment Instrument (based on the EPUAP pressure ulcer classification). The latter was taught to two different groups;

Third phase: The Braden Q and the Skin Assessment Instrument, are being used separately by 2 different groups. Prior to the application of the scale and during the course of this study, 3 monthly prevalence studies are carried out. Current data demonstrates a decreased in the number of pressure ulcers, particularly following the implementation of this scheme. Paediatric nurses are now more aware of this issue resulting in better nursing practices in the prevention and treatment of pressure ulcers.