INTERNATIONAL ABSTRACTS

OPTIMAL TREATMENT OF PARTIAL THICKNESS BURNS IN CHILDREN: A SYSTEMATIC REVIEW

This paper from The Netherlands presents a systematic review of wound management and dressing materials to select the best treatment option for children with burns. A large part of the patient population of a burn centre consists of children, most of whom are younger than four years old. The majority of these young children suffer from superficial and deep partial thickness scald burns that may easily deepen to full thickness burns. A proper wound therapy, that prevents infection and ensures a moist wound condition, might prevent the deterioration of the wound. A search in Medline and Embase revealed 51 articles for a critical appraisal. The articles were divided into randomized controlled trials, cohort studies and a group of case-reports. Total appraisal did not differ much amongst the groups; the level of evidence was highest in the randomized controlled trials and lowest in the case-reports. In 16 out of 34 comparative studies, silver sulfadiazine or a silver sulfadiazine/chlorhexidine-gluconate combination was the standard of wound care treatment. The competitor dressing was Biobrane® in six studies and amnion membrane in three. Tulle gauze, or tulle gauze impregnated with an antibacterial addition were the standard of care treatment in seven studies. In general, membranous dressings like Biobrane® and amnion membrane performed better than the standard of care on epithelialization rate, length of hospital stay and pain for treatment of partial thickness burns in children. However, hardly any of the studies investigated long-term results like scar formation.

A.F.P.M. Vloemans, AFPM, Hermans MHE, Liebregts J, Middelkoop E
Burns, 40: 177-90, March 2014

PLAY AND HEAL: RANDOMIZED CONTROLLED TRIAL OF DITTO™ INTERVENTION EFFICACY ON IMPROVING RE-EPITHELIALIZATION IN PEDIATRIC BURNS

This paper from Australia addresses the little explored issue of the relationships between pain, stress and anxiety, and their effect on burn wound re-epithelialization. The aim was to investigate the effect of the Ditto™ (a hand-held electronic medical device providing procedural preparation and distraction) intervention on re-epithelialization rates in acute pediatric burns. From August 2011 to August 2012, children (4–12 years) with an acute burn presenting to the Royal Children’s Hospital, Brisbane, Australia fulfilled the study requirements and were randomized to Ditto™ intervention or standard practice. Burn re-epithelialization, pain intensity, anxiety and stress measures were obtained at every dressing change until complete wound re-epithelialization. One hundred and seventeen children were randomized and 75 children were analyzed (n=40 standard group; n=35 Ditto™ group). Inability to predict wound management resulted in 42 participants no longer meeting the eligibility criteria. Wounds in the Ditto™ intervention group re-epithelialized faster than the standard practice group (~2.14 days (CI: −4.38 to −1.06), p-value=0.061), and significantly faster when analyses were adjusted for mean burn depth (~2.26 days (CI: −4.48 to −0.04), p-value=0.046). Following procedural preparation at the first change of dressing, the Ditto™ group reported lower pain intensity scores (~0.64 (CI: −1.28, 0.01) p=0.052) and lower anxiety ratings (~1.79 (CI: −3.59, 0.01) p=0.051). At the second and third dressing removals average pain (FPS-R and FLACC) and anxiety scores (VAS-A) were at least one point lower when Ditto™ intervention was received.

The Ditto™ procedural preparation and distraction device is a useful tool alongside pharmacological intervention to improve the rate of burn re-epithelialization and manage pain and anxiety during burn wound care procedures.

Brown NJ, Kimble RM, Rodger S, Ware RS, Cuttle L
Burns, 40: 204-13, March 2014

ADVANCED PEDIATRIC LIFE SUPPORT IN BURN INJURIES

This paper from India aims to popularize an advanced life support course for pediatric burns. In major burns in the pediatric age group, there is a very narrow transition between life and death. Amongst deaths due to pediatric trauma, burns rank the second highest in India. Emergency management of each pediatric burn requires knowledge of normal physiology and its changes with age as this is important in planning management for the burnt child. It must be remembered that children with burns have a higher morbidity and mortality and thus the advanced pediatric life support (APLS) in burns should be the care given over the first 24 h to the burnt child.

Mathangi Ramakrishnan K
Indian Journal of Burns, 21: 8-13, 2013

RESPIRATORY BURN INJURIES: AN OVERVIEW

This paper from the USA provides an overview of inhalation injuries. Respiratory burns are caused by the aspiration of heated gases or toxic products of incomplete combustion. The extent of damage is determined by the temperature of the inhaled gases, their composition and the duration of exposure. Along with age and size of full-thickness burn injury, the presence of respiratory burns is one of the most powerful predictors of poor outcome in patients admitted to burn centers. There are three types of respiratory burns: (a) Inhalation of systemic asphyxiants such as carbon monoxide. (b) Thermal damage to airway above vocal cords. (c) Injury to tracheobronchial tree and pulmonary parenchyma by inhaled toxicants. The goals of initial management of the airway and breathing are to protect the patency of the airway to prevent suffocation and to ensure...
adequate ventilation and oxygenation. High levels of inspired oxygen are necessary to treat carbon monoxide poisoning. Intubation and mechanical ventilator support with low tidal volumes is required to treat subglottic respiratory burns. Because there are no known antidotes to the poisonous effects of inhaled smoke, treatment of respiratory burns is protective and supportive.

Peck, M

MICRONUTRIENTS AFTER BURN INJURY: A REVIEW (USA)

This paper from the USA highlights the issue of assessing and fulfilling micronutrient requirements in burn victims. Supplementation of micronutrients after burn injury is common practice in order to fight oxidative stress, support the immune system, and optimize wound healing. Assessing micronutrient status after burn injury is difficult because of hemodilution in the resuscitation phase, redistribution of nutrients from the serum to other organs, and decreases in carrier proteins such as albumin. Although there are many preclinical data, there are limited studies in burn patients. Promising research is being conducted on combinations of micronutrients, especially via the intravenous route.

Nordlund MJ, Pham TN, Gibran NS
Journal of Burn Care & Research, 35: 121-33, 2014

THE YEAR IN BURNS 2012

This paper from the USA provides a review of burns articles. Approximately 2457 research articles were published with burns in the title, abstract, and/or keyword in 2012. This number continues to rise through the years; this article reviews those selected by the Editor of one of the major journals in the field (Burns) and his colleague that are most likely to have the greatest likelihood of affecting burn care treatment and understanding. As done previously, articles were found and divided into these topic areas: epidemiology of injury and burn prevention, wound and scar characterization, acute care and critical care, inhalation injury, infection, psychological considerations, pain and itching management, rehabilitation, long-term outcomes, and burn reconstruction. Each selected article is mentioned briefly with comment from the authors; readers are referred to the full papers for further details.

Wolf SE, Arnoldo BD
Burns, 39: 1501-13, 2013

KEEPPING NEW DELHI METALLO-β-LACTAMASE-1 AT THE DOOR

New Delhi metallo-β-lactamase-1 is a recently described gene that codes for carbapenem resistance. Inherently transferable between Gram-negative bacteria on a plasmid that also confers extended antibiotic resistance, it represents a potentially serious problem for susceptible patients, such as burn victims, and is spreading globally at a rapid rate. This paper from the U.K. presents a case of a septic burn patient returning from India, whose microbiological cultures grew bacteria expressing New Delhi metallo-β-lactamase-1. His TBSA was 14%. His length of stay as an inpatient was 95 days. This is the first case report of this resistance strain from a U.K. burns unit. Isolation, barrier nursing and the use of hydrogen peroxide vapour decontamination proved effective in limiting transmission and spread. The authors are of the opinion that their experience has implications for the management of similar cases in the future.

Paget J T, Burge T S
Journal of Burn Care & Research 35(2), 2014

THREE-DIMENSIONAL INSIGHTS INTO DERMAL TISSUE AS A CUE FOR CELLULAR BEHAVIOR

Scars formation after injury is a big problem, which influences the skin function and esthetic appearances. Recent researchers have hinted many directions, one of which has shown that scar formation is related to the loss of integrity in dermal tissues. The structure of dermal tissue, which contains mostly collagen, is not only crucial for the mechanical stability of skin, but also acts as a dermal template, providing contact guidance for regulating cell behavior and restoring normal structure and function to skin that has been damaged by injury. These findings suggest a series of questions. How does contact guidance regulate cell behavior? What is the three-dimensional (3D) architecture of the dermal tissue? How does the native 3D architecture influence cell behavior in vivo? This paper from China explores the authors’ recent research and reviews recent advances regarding the phenomenon of contact guidance, exploring the possible mechanism behind it.

Jiang Y, Lu S
Burns, 40: 191-9, 2014

WHY SELF-IMMOLATION? A QUALITATIVE EXPLORATION OF THE MOTIVES FOR ATTEMPTING SUICIDE BY SELF-IMMOLATION

This paper explores the motives for suicide by self-immolation in Kermanshah, Iran. Given that this type of suicide is one of the great health concerns in developing countries, exploration of motives behind this can be considered a crucial aspect in seeking its prevention. A qualitative approach using a semi-structured interview was employed. Fifteen participants including 9 self-immolated patients, a patient’s husband, and 5 medical staff who treated these patients were interviewed. The interviews were taped and transcribed. A content analysis using constant comparison was performed for transcribed interviews. The results revealed 5 main categories of motives for suicide by self-immolation: mental health problems, family problems, cultural context, self-immolation as a threat, and the distinct characteristics of the method. All categories had their specific subcategories which had been integrated based on distinct properties in a given category. More than one motive might be addressed by study participants. There are several reasons for suicide by self-immolation that should be considered in prevention programs. There may be an interactional pattern among the motives. The authors recommend further study to explore the process of the interactional pattern.

Rezaiea L, Hosseinia SA, Rassafiania M, Najafib F, Shakeric J, Khankehd HR
Burns, 40: 319-27, 2014
ETHNICITY AND ETIOLOGY IN BURN TRAUMA

The purpose of this study from Canada was to retrieve data from the British Columbia Professional Firefighters Burn Unit registry, with a focus on ethnicity and how it is involved in burn trauma. It is hypothesized that mechanism, severity, and other patient characteristics are significantly different among different ethnic groups. Furthermore, it is believed that these data can be used to augment burn prevention strategies. Data for burn patients admitted from 1979 to 2009 were reviewed from the burn registry. The main focus was with differences seen among the four main ethnicities throughout the analysis, Caucasian, Aboriginal, Asian, and Indoasian, reflecting the population distribution of the region. Age and sex were also considered when looking at burn mechanism, severity, contributing and coexisting factors. Caucasians were the largest group (79.1%) and included the largest male:female ratio (3.3:1), with high numbers of flame injury (53.9%). Caucasians presented with the highest mortality (6.6%) compared with 4.1% for all other ethnicities; P < .006. Asian patients (8.1%) showed significantly higher occurrences of urban (64%) and workplace (28.9%) injuries with a larger proportion of scald injury (38.9%). Indoasians included larger numbers of women (36.4%) and household scald injuries (33.9%) whereas Aboriginals suffered the most flame injuries (60.1%) in rural areas with more frequent contributing factors such as alcohol. The study found multiple significant differences in the burn injury population when segmented by ethnicity. Though the exact reasons for these differences are difficult to say with certainty, it allows a unique opportunity to focus communication and prevention efforts to specific communities.

Papp A, Haythornthwaite J
Journal of Burn Care & Research, 35(2), 2014

THE POTENTIAL IMPACT OF WRONG TBSA ESTIMATIONS ON FLUID RESUSCITATION IN PATIENTS SUFFERING FROM BURNS: THINGS TO KEEP IN MIND

Accurate estimation of burn size is of critical importance as it is incorporated in every resuscitation formula. This paper from Austria investigates total burn surface area (TBSA) accuracy among burn specialists to assess the potential impact of incorrect evaluation on variations of resultant fluid resuscitation volumes and discuss future possibilities of estimating or measuring TBSA more precisely. In a poll during two international burn meetings in 2010 and 2011, demonstrating three pictures of patients with different burn wound patterns and sizes, the authors asked participants to estimate the total surface area burned in percentages. The resultant fluid volume differences based on established resuscitation formulas was then calculated. In the polled 80 participants, the estimations for three patients demonstrated the following differences (DIF=MAX−MIN): for patient 1, 2 and 3 they were 22.5 (25–2.5), 16.5 (20–3.5) and 31.5 (40–8.5) %TBSA, respectively. Based on these differences calculations were made of the volume differences for patients 1, 2 and 3, which were 1080ml (Cincinnati Formula), 5280ml (Parkland Formula) and 2016ml (Cincinnati Formula), respectively. The analysis showed high deviations of total body surface area among participants, also resulting in large variations of initial fluid resuscitation volumes. One option to address estimation variances is to perform more accurate assessments; also incorporating new technologies aiding to improve the quality of body surface estimations and related decisions

Parvizi D, Kamolz LP, Giretzlehner M, Haller HL, Trop M, Selig H et al.

BURN INJURIES IN EASTERN ZAMBIA: IMPACT OF MULTIDISCIPLINARY TEACHING TEAMS

The American Burn Association/Children’s Burn Foundation (ABA/CBF) sponsors teams who offer burn education to healthcare providers in Zambia, a sub-Saharan country. The goals of this study are 1) to acquire burn-patient demographics for the Eastern Province, Zambia and 2) to assess the early impact of the ABA/CBF-sponsored burn teams. This is a retrospective chart review of burn patients admitted in one mission hospital in Katete, Zambia, July 2002 to June 2009. July 2002 to December 2006 = data before ABA/CBF burn teams and January 2007 to June 2009 = burn care data during/after burn outreach. There were 510 burn patients hospitalized, male:female ratio 1.2:1. Average age = 15.6 years, with 44% younger than 5 years. Average TBSA burned = 11% and mean fatal TBSA = 25%. Average hospital length of stay = 16.9 days survivors and 11.6 days nonsurvivors. Most common mechanisms of burn injuries: flame (52%) and scald (41%). Ninety-two patients (18%) died and 23 (4.5%) left against medical advice. There were 191 (37.4%) patients who underwent 410 surgical procedures (range 1-13/patient). There were 138 (33.7%) sloughectomies, 118 (28.7%) skin grafts, 39 (9.5%) amputations, and 115 (28.1%) other procedures. Changes noted in the 2007 to 2009 time period: more patients had burn diagrams (48.6 vs 27.6%, P < .001), received analgesics (91 vs 84%, P = .05), resuscitation fluid (56 vs 49%, P = not significant [NS]), topical antimicrobials (40 vs 37%, P = NS), underwent skin grafting (35.5 vs 25.1%, P = NS), and underwent any operative intervention (40.6 vs 35.2%, P = NS), compared with patients treated between 2002 and 2006. This study represents the largest, most comprehensive burn data set for a sub-Saharan region in Africa. There has been a statistically significant improvement in documentation of burn size as well as administration of analgesics, validating the efficacy of the ABA/CBF-sponsored burn teams. Continued contact with burn teams may lead to increased use of resuscitation fluids, topical antimicrobials, and more patients undergoing operative intervention, translating into improved burn patient outcomes.

Edwards D, Heard J, Latenser BA, Quinn KY, van Bruggen J, Jovic G
Journal of Burn Care & Research, 32: 31-8, 2011

A 10-YEAR RETROSPECTIVE ANALYSIS OF CEMENT BURNS IN A TERTIARY BURNS CENTER

This paper from Australia exposes the issue of cement burns. Cement is extensively used both in the professional construction and “do-it-yourself” industries. Despite a number of small published series during the past 80 years highlighting its potential for harm, little seems to have been done to make consumers aware of its risks of causing serious burn injuries. The authors present 10 years of a tertiary adult burn center’s experience with these burns, and highlight the significance of these burns on the active, working sector of society. Both professionals and part-time enthusiasts are affected, with burns of significant depth and subsequent impairment of normal functioning. The authors propose a better education system to highlight the risks and, in time, reduce the incidence of cement burns.

Alexander W, Coglan P, Greenwood J
Journal of Burn Care & Research, 34: 86, 2013