MASS CASUALTY INCIDENTS WITH MULTIPLE BURN VICTIMS: RATIONALE FOR A SWISS BURN PLAN

This Swiss paper provides an analysis of published reports with the aim of proposing a rational model for burn rescue and hospital referral in Switzerland. The review of the relevant literature comprises a systematic search of PubMed/Medline, reference textbooks, and journals, together with landmark articles. Generally speaking, hospitals have limited surge capacities in the event of burn disasters, and a special approach is required in the pre-hospital and hospital management of disaster victims. Mobile burn teams have to be deployed to the scene to provide specialized rescue and care. These burn teams bring the required skills and improve the efficiency of the classical disaster response teams. Burn teams assist in both primary and secondary triage, contribute to early patient management, and advise non-specialized designated hospitals that provide acute care for burn patients with a percentage of total body surface area burned < 20-30%. The main elements of successful deployment of mobile burn teams are socio-economic feasibility, streamlined logistical implementation, and coordination with other agencies, including subsidiary military resources.


Burns, 36: 741-50, 2010

USE OF ACTICOAT™ DRESSINGS IN BURNS: WHAT IS THE EVIDENCE?

Silver has long been known to possess antimicrobial effect and today various silver-based dressings are used in burns treatment. One of these is Acticoat™, a nanocrystalline silver dressing developed in the late 1970s which overcame some shortcomings of previous dressings because it provided sustained release of silver for up to seven days. The aim of this research from Great Britain was to determine the level of evidence in the literature in the light of the recent increased use of Acticoat™. A Medline search was carried out to find articles evaluating the use of Acticoat™ in burn wounds, and each article found was given a level of evidence (LOE) adapted from the Oxford Centre for Evidence-Based-Medicine. Only one study was considered to be LOE 1, i.e. a multicentre randomized controlled trial comparing Acticoat™ with silver sulphadiazine. This study demonstrated that Acticoat™ had better antimicrobial activity than other available silver dressing, while other studies suggested that Acticoat™ had few adverse effects, reduced healing time, was easy to apply, and did not require many dressing changes, features that make Acticoat™ an ideal dressing for burn wounds.

Khundkar R, Malic C, Burge C

Burns, 36: 751-8, 2010

EMOTIONAL ASSOCIATIONS WITH SKIN: DIFFERENCES BETWEEN BURNED AND NON-BURNED INDIVIDUALS

Our appearance, and therefore the condition of our skin, is crucial for our physical and psychological integrity, and is strongly associated with our emotional self-awareness. Burn victims suffer negative sensations as a result of the changed appearance of their skin after injury and certain experiences during treatment. This study from Austria analyses variations in the emotional associations with skin in burn victims (burn group) to persons who had not suffered any burn (control group). In the first stage of the study, 966 volunteers were recruited for the rating of emotional associations with skin in the control group, and a representative profile for non-injured individuals was thus created. In the second part, 44 burn patients answered the same questionnaire. The quantitative rating of emotional associations with skin was carried out using a newly designed questionnaire. Both groups were found to have have positive associations with skin. One significant difference was the overall rating of the item “importance”: burn victims considered skin “important” than controls did. The survey suggests that despite long treatment, rehabilitation and even near-death experiences, the burn patients involved in the study continued to have positive associations with skin, a finding that should encourage all burns specialists to maintain a continuous follow-up and promote their patients’ psychological and social support.

Tischer A, Lumenta DB, Kamolz LP, Mittlboeck M, Frey M

Burns, 36: 759-63, 2011
TOPICAL NEGATIVE PRESSURE THERAPY: DOES IT ACCELERATE NEOVASCULARIZATION WITHIN THE DERMAL REGENERATION TEMPLATE, INTEGRA? A PROSPECTIVE HISTOLOGICAL IN VIVO STUDY

Integra has been found to accelerate vascularization but there is a lack of histological evidence. The aim of this study from Great Britain was to conduct a histological study of the rate of neovascularization within the dermal regeneration template (DRT), Integra, when combined with topical negative pressure (TNP) dressings. Eight burn patients with nine re- construction sites were considered. Unmeshed Integra and fibrin sealant were used to promote adherence. TNP was applied for the duration between the first and second stages. The patients had serial biopsies on days 7, 14, 21, and 28 after application. Template vascularization was assessed as a percentage of the template depth in which patent, vascularized channels could be demonstrated. It was found that the median percentage of the template depth that showed canalized channels was 0%, 20%, 61%, and 80% for days 7, 14, 21, and 28, respectively. It was concluded that TNP dressings applied to dermal templates reduced shearing forces, restricted seroma and haematoma formation, simplified wound care, and improved patient tolerance. It was not however possible to demonstrate that TNP accelerated neovascularization, as verified by the presence of histologically patent vascular channels.

Moieni NS, Yarrow J, Kamel D, Kearn D, Mendon D
Burns, 36: 764-8, 2010

TREATMENT OF POST-BURN NEUROPATHIC PAIN: EVALUATION OF PREGABALIN

After wound healing some burn survivors report a form of pain that has the characteristic features of neuropathic pain and does not respond well to conventional medications. Considering that pregabalin has been successful in the treatment of diabetic and post-herpetic neuropathic pain, research was conducted on its use in the treatment of post-burn neuropathic pain. This retrospective review from the USA considers a series of 24 burn outpatients treated with pregabalin who were invited to use a numerical pain scale before and after treatment to determine its effectiveness. Out of the 13 patients who successfully completed the study (11 were excluded for various reasons), nine (69%) reported a lower pain score after pregabalin treatment. Two other patients who had discontinued using pregabalin had a pain score that dropped to zero. Pregabalin was found to be well tolerated and rapidly effective as a means of treating post-burn neuropathic pain. The paper concludes with a discussion of the mechanism, pharmacokinetic benefits, and potential benefits of this treatment. Future research can address the aspect of the effects on quality of life and the reduction of opioid use.

Wong L, Turner L
Burns, 36: 769-72, 2010

CONTRIBUTION OF BACTERIAL AND VIRAL INFECTIONS TO ATTRIBUTABLE MORTALITY IN PATIENTS WITH SEVERE BURNS: AN AUTOPSY SERIES LA

Burn patients are highly susceptible to bacterial infections, which are a common cause of mortality, as also to viral infections, notably herpes simplex virus (HSV) and cytomegalovirus (CMV). This study presents a retrospective review of all autopsy reports from patients with severe thermal burns treated at the US Army Institute of Research burn unit over 12 years (1991-2003). The review focused on patients whose death was attributed to bacterial or viral causes. Out of 3751 admissions, 228 patients died, of whom 97 had an autopsy, death being attributed to bacteria in 27 patients and to a virus in five. The bacteria associated with mortality included Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumoniae, and Staphylococcus aureus. The association with mortality was not directly related to percentage of total body surface area burn, percentage full-thickness burn, inhalation injury, or day of death post-burn. The commonest cause of bacteria-related death was bloodstream infection (50%), followed by pneumonia (44%) and wound infection (6%). All the viral infections associated with mortality involved the lower respiratory tract (HSV in four cases and CMV in one). Four of these five patients had showed inhalation injury by bronchoscopy and they all had facial and neck burns; two had concomitant Staphylococcus pneumonia. It was therefore demonstrated that in spite of advances in care, gram-negative bacterial infections and infection with S. aureus continue to be the commonest cause of bacteria-related mortality during the hospital course. Viral infections are also associated with mortality, with numbers remaining stable over the years.

Burns, 36: 773-79, 2010

A RELIABLE AND VALID OUTCOME BATTERY FOR MEASURING RECOVERY OF LOWER LIMB FUNCTION AND BALANCE AFTER BURN INJURY

The lack of validated injury specific tools makes it difficult to measure post-burn recovery with a reliable degree of accuracy. This Australian research therefore selected and validated a battery of outcome measures of recovery after lower limb burn injury (LLBI). Three tests were used, i.e. reliability of single leg stance (SLS), timed up and go (TUG), and tandem walk (TW), together with a test-retest trial in a series of 28 patients with LLBI in order to compare changes in lower limb outcome measures with changes in the Burn Specific Health Scale-Brief (BSSHs-B). It was found that most of the tests were reliable - exceptions were the SLS test with eyes closed and the TW-backwards test, which was redundant. The TUG test and the TW-forwards test were therefore found to be valid in burn patients and with the
BSHS-B they form a useful test battery for measuring recovery.

Finlay V, Phillips M, Wood F, Edgar D
Burns, 36: 780-6, 2010

PATHWAY GENETIC LOAD ALLOWS SIMULTANEOUS EVALUATION OF MULTIPLE GENETIC ASSOCIATIONS

Genome-wide association studies have been generally successful, although heritability continues to be unidentified in many disease states. The possible reason for this “missing” heritability could be related to epistatic interactions among multiple loci, which are typically ignored. This research from Switzerland simultaneously assessed the epistatic interactions between allelic variations within genes confined to a single pathway, defined as the pathway genetic load (PGL). Separate analyses were used to evaluate the risk of sepsis and death associated with alleles at six loci in the TLR4 signalling and response pathway previously known or suspected to be linked to the development of sepsis after traumatic injury. One hundred and fifty-five patients were considered who presented ≥15% TBSA burns and no significant non-burn trauma, traumatic or anoxic brain injury, or spinal cord injury and who survived >48 h post-admission. The clinical data were collected prospectively. Adjustment was made for burn size, inhalation injury, age, gender, and race, and PGL was found to be associated with a higher probability of complicated sepsis and death. It is concluded that the relative size and variability of aORs indicate genetic associations with PGL better than the analysis of loci individually by multivariate logistic regression.

Huebinger RM, Garner HR, Barber RC
Burns, 36: 787-92, 2010

CONTRIBUTION OF BACTERIAL AND VIRAL INFECTIONS TO ATTRIBUTABLE MORTALITY IN PATIENTS WITH SEVERE BURNS: AN AUTOPSY SERIES

This study from the USA consists of a retrospective review of all autopsy reports from patients with severe thermal burns treated at the US Army Institute of Research. The review considered patients whose death was due to a bacterial or viral cause according to the autopsy report. Out of 3751 cases, 228 patients died, of whom 97 were subjected to autopsy. Death was attributed to bacteria in 27 patients and to virus in five. The bacterial pathogens responsible for mortality included Pseudomonas aeruginosa, Escherichia coli, Klebsiella pneumoniae, and Staphylococcus aureus. The association with mortality was not related to percentage total body surface area burn, percentage full-thickness burn, inhalation injury, or day of death post-burn. Bloodstream infection was the commonest cause of bacteria-related death (50%), followed by pneumonia (44%) and wound infection (6%). All the five viral infections associated with mortality involved the lower respiratory tract (herpes simple virus in four, cytomegalovirus in one). Four of these five patients had evidence of inhalation injury by bronchoscopy, all had facial and neck burns, and two had concomitant Staphylococcus pneumonia. The advances in care have not prevented Gram-negative bacterial infections and infection from remaining the commonest cause of bacteria-related mortality early in the hospital course. Viral infections also continue to be related to mortality.

Burns, 36: 737-9, 2010

SEVERE TOXICODERMA: THE ORGANIZATION OF TAKING IN CHARGE (in French)

This French paper considers the difficulties of treating severe forms of toxicoderma and the present-day organization of taking these patients in charge. This precise term, “severe toxicoderma”, is now preferred to “bullous dermatosis” as this term vividly expresses the concept of a cutaneous reaction to a medication, while “severe” suggests an impact on prognosis, thus justifying hospitalization in a burns centre. Current thinking on such pathologies is presented (early mortality, less late mortality, recovery without sequelae, absence of specific treatment). The paper concludes with considerations on the hospitalization of the patients and the opinion is expressed that thanks to the creation of special competent centres the organization of burns care has become simple and above all more effective.

Ravat F, Peslages P, Payre J, Kowalczyk A
Brûlures, 11: 117-19, 2010

TWO RARE COMPLICATIONS ENCOUNTERED DURING THE COURSE OF EXTENSIVE EPIDERMIC NECROLYSIS (in French)

Two cases reported from France, not related directly to burns but of interest to burns specialists, are reported in view of the treatment required. One concerns acute anuria in an 11-yr-old boy suffering from toxic epidermic necrolysis (TEN), which developed because of treatment with carbamazepine. Both the patient’s ureters were blocked with fragments of urinary mucosa. The other case is one of vanishing bile duct syndrome associated with TEN developing after treatment with ibuprofen. This rare pathology has a poor prognosis.

Brûlures, 11: 126-8, 2010