INTERNATIONAL ABSTRACTS

HYDROCORTISONE IMPROVED HAEMODYNAMICS AND FLUID REQUIREMENT IN SURVIVING BUT NOT NON-SURVIVING OF SEVERELY BURNED PATIENTS

The administration of hydrocortisone can lead to a reduction of catecholamines and improved outcome in septic patients. However, no data exist regarding the use of hydrocortisone in burn patients although, in such patients, the reduction of vasopressors may be even more crucial for outcome, owing to improved skin perfusion. This study is the first to present results of the impact of hydrocortisone administration in severely burned norepinephrine-dependent patients. In our prospective cohort study, 14 consecutive severely burned patients, 12 h after norepinephrine dependency, received a 100-mg hydrocortisone bolus followed by 0.18 mg/kg/h hydrocortisone. The course of the necessary norepinephrine dose and of fluid balance was documented 12 h before and after the first dosage of hydrocortisone. Statistical analysis showed an unexpected increase in the norepinephrine dosage. A statistical *post hoc* evaluation of surviving and non-surviving patients indicated a significant increase of norepinephrine in non-survivors, whereas in survivors it was possible to reduce norepinephrine significantly. Also, it was possible to significantly reduce median fluid requirements in surviving patients, whereas in the non-survivor group no change of volume was needed. Our data suggest that hydrocortisone could be useful in selected patients with severe burn injuries. However, patients not responding to hydrocortisone administration seem to have a poor prognosis. Our findings contrast with previously published data on septic patients, in whom hydrocortisone administration caused in a reduction in norepinephrine. Further prospective controlled studies will be necessary to establish hydrocortisone in the routine therapy of severely burned patients.

Winter W., Kamolz L., Donner A., Hoerauf K., Blaicher A., Andel A.

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DOUBLE REVERSE V-Y-PLASTY IN POST-BURN SCAR CONTRACTURES: A NEW MODIFICATION OF V-Y-PLASTY

Several techniques can be used in the surgical treatment of post-burn scar contractures. However, distal flap necrosis often occurs as most of these techniques require random-pattern flaps and there is frequently poor vascular supply to the scar tissue. In V-Y-plasty, excess tissue requires excision of the dog-ear. A new modification of V-Y-plasty, known as "double reverse V-Y-plasty", is described. Nineteen post-burn scar contractures were successfully treated with this plasty. The post-operative results reflect the versatility of the technique, especially in neck and extremity contractures. There were no cases of distal flap necrosis. Double reverse V-Y-plasty is an effective alternative to current techniques in surgical treatment of every kind of post-burn scar contracture with one or more contracture lines.

Askar I.

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REPAIR AND RECONSTRUCTION OF MASSIVELY DAMAGED BURN WOUNDS

This paper reports the repair and reconstruction of massively damaged burn wounds. One hundred and forty-eight patients with deep burn tissue defects of various origin admitted from January 1993 to December 2000 were analysed. One hundred and seventy-six flaps were transferred, mostly local flaps to repair deep burn wounds. Technical innovations to repair large soft-tissue defects in the temporal region and ear, chin and lip, and dorso-lateral aspect of the foot, due to deep burns, were explored. New techniques were developed to define necrotic tissue and vascular damage as a result of electrical injury. The largest flaps measured 22 x 30 cm. The flap survival rate was 96.5%. Function and configuration were satisfactory from 4 months to 8 years in the follow-up.

Jiake Chai, Huifeng Song, Zhiyong Sheng, Baoju Chen, Hongming Yang, Ligen Li

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BACTERIAL TOXICOSIS/TOXIC SHOCK SYNDROME AS A CONTRIBUTOR TO MORBIDITY IN CHILDREN WITH BURN INJURIES

When children with thermal injury suddenly become unwell, it may be difficult to formulate an accurate diagnosis in the early stages of the illness. Out of 71 children admitted to a burns unit in Ireland over a 15-month period, 13 became acutely toxic. Most of the children had relatively small burns and the exact reason for their sudden deterioration was not immediately apparent. Several of the children required admission to the intensive therapy unit, and one child died. The elevated number of children experiencing this significant morbidity over a relatively short time prompted us to perform a detailed retrospective study in order to ascertain the cause of the deterioration and identify any patterns in the signs and symptoms. There was considerable variation in the clinical picture of the children developing toxicosis but several common features were observed which resembled those seen in the toxic shock syndrome (TSS). We applied the criteria for TSS as defined by the Centres for Disease Control to each of the 13 children All the criteria were noted in six children and the majority in the other seven. This was a much higher incidence than might normally be expected. The clinical features of children with TSS are not always easily distinguishable from those observed in other illnesses. We therefore explored the possibility of alternative diagnoses that could have caused the toxicosis. The mortality associated with TSS can be high, especially if there is a delay in recognition and subsequent management of the disease. Clinicians should be aware that TSS is probably more prevalent than previously thought and they should use a high index of suspicion in any burned child whose clinical condition suddenly deteriorates.

Brown A.P., Khan K., Sinclair S.

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EVALUATION OF DONOR SKIN VIABILITY:

FRESH AND CRYOPRESERVED SKIN USING TETRAZOLIUM SALT ASSAY

Allograft take is known to be much influenced by tissue viability, and the assessment of cell viability in allograft skin is an essential step to ensure a supply of good quality allograft skin for the clinical repair of wounds. The objective of this paper, from Turin, Italy, is to set up storage protocols that maintain high allograft viability after harvest, treatment, and storage. The viability of post-mortem allografts (n = 350) harvested from 35 different donors was investigated using the methyl tiazol tetrazolium (MTT) salt assay. The conditions of preparation and storage of the allograft included the following: fresh skin samples (about 12, 30, and 60 h after harvesting); the same specimens (stored at 4 and 37 °C) tested for at least 1 month; samples after cryopreservation and thawing; and thawed specimens tested daily for at least 6 days. Parallel histomorphological analysis performed in each of these conditions showed a correlation between changes in structure and changes in viability, as measured by the MTT quantitative assay. The viability index (VI) of skin is expressed as the ratio between the optical density produced in the MTT assay by the skin sample and its weight in g. The percentage viability index (PVI) is the ratio between the VI of the fresh sample (considered as 100% viability) and the value of specimens from the same harvest batch after storage or cryopreservation. The results indicated that samples tested within 12-30 h of harvesting had an average VI of about 75, with little variation. Samples tested within 60 h had an average VI of 40 (viability decrease, about 50%). A protocol to treat skin within a maximum of 30 h was set up. The data suggested that skin stored at 37 °C underwent a viability increase during the first 2 days after harvesting. Viability under these conditions then decreased very quickly. After 6 days of preservation at this temperature, the samples were no longer viable (PVI = 0). The tissue structure started to become damaged after 3 days. Skin stored at 4 °C showed a very slow viability decrease. After 15 days, viability was still almost 25% that of fresh samples. The tissue architecture showed no signs of damage under these conditions until day 7 after harvesting. MTT analysis was performed on the specimens cryopreserved with 10% dimethyl sulphoxide. These measurements were compared with the viability assessment of the same fresh skin samples (considered as 100%) analysed within 30 h of harvesting. The average PVI of thawed skin was 54% that of fresh samples. These findings show that the viability of the cryopreserved skin was comparable to that of the fresh skin stored at 4 °C for 4 days. The PVI of the thawed skin samples decreased dramatically within 24 h, reaching 0% in 6 days.

Castagnoli C., Alotto D., Cambieri I., Casimiri R., Aluffi M., Stella M., Teich Alasia S., Magliacani G.
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ROLE OF HISTAMINE RECEPTORS IN THE REGULATION OF OEDEMA AND CIRCULATION POST-BURN

Histamine is a powerful endogenous vasoactive agent released in increasing amounts post-burn, yet its role in post-burn oedema formation is controversial and its effect on burn circulation has been little investigated. This Swedish study considers the involvement of H_1, H_2, and H_3 receptors in post-burn oedema in rats exposed to skin and muscle burns and their influence on skin circulation post-burn. The selective antagonists clemastine (H_1), ranitidine (H_2), thioperamide (H_3), and the selective H_3 receptor agonist imetit were used. It was found that none of the antagonists or the H_3 agonist had any significant effect on post-burn oedema. Clemastine and thioperamide did not induce any significant effect on blood flow in partial- or full-thickness skin burns, while ranitidine significantly reduced blood flow in full-thickness burns. The H_3 receptor agonist imetit significantly increased blood flow, both in partial-thickness burn injuries and in full-thickness burns. Imetit significantly increased mean arterial pressure, while thioperamide significantly reduced systemic pressure. It was concluded that H_1, H_2, and H_3 receptors were not important actors in the regulation of vascular patency permeability, while H_3 receptors played an important role by increasing skin circulation post-burn, presumably owing to relaxation of vascular smooth muscle and/or by interacting with other inflammatory neurotransmitters. The data also suggested that H_2 receptor blockers might not be the best choice for stress ulcer prophylaxis in burn patients.

Räntfor L., Cassuto J.
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VALIDATION OF AN OBJECTIVE SCAR PIGMENTATION MEASUREMENT BY USING A SPECTROCOLORIMETER

Although scar pigmentation changes throughout its maturation process, often being used as an indicator of scar maturation, it is often rated subjectively. This study investigated the application of a commercial spectrocolorimeter to produce a reliable measurement of scar pigmentation. The *Commission Internationale de l'Eclairage* model of colour was adopted for the measurement of scar pigmentation. Twenty-four patients with hypertrophic scars at different stages of maturation were selected for the study. They were inspected by two therapists using the Vancouver scar scale (VSS) and a spectrocolorimeter for inter-rater reliability. The measurements were taken after 30 min by the same group of therapists (test-retest reliability). The results indicated that the inter-rater reliability between the three therapists was satisfactory. The test-retest reliability of the spectrocolorimeter was satisfactory. A significant difference was noted between measurements of normal skin and of hypertrophic scars in all colour parameters except chroma C*. A positive relationship was found between VSS scores and the spectrocolorimeter readings. The spectrocolorimeter was found to be a reliable instrument for the quantification of scar pigmentation and the differentiation of normal skin and scar tissue. Spectrocolorimetry could be used in further studies to explore the constructs of scar properties.

Li-Tsang C.W.P., Lau J.C.M., Liu , S.K.Y.
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