Cool Running Water First Aid Decreases Skin Grafting Requirements in Paediatric Burns: A Cohort Study of Two Thousand Four Hundred Ninety-five Children

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Background & Objectives:

- First-aid guidelines recommend the administration of cool running water in the early management of thermal injury.
- The objective of this study was to analyze the associations between first aid and skin-grafting requirements in children with burns.
- **The study answers whether there is an association between 20 minutes of cool running water within 3 hours of injury and skin-grafting requirements in children with burns.**

Methods: This cohort study used a prospectively collected registry of patients managed at a tertiary children's hospital. Multivariate logistic regression models were used to evaluate the relationship between first aid and the requirement for skin grafting. Secondary outcomes included time to re-epithelialization, wound depth, hospital admission and length of stay, and operating room interventions. Adequate first aid was defined as 20 minutes of cool running water within 3 hours of injury.

ACADEMIC P.E.A.R.L.S

Pediatric Evidence And Research Learning Snippet

Can Running Cool Water as First Aid Decrease Skin Grafting Requirements in Pediatric Burns?

Results:

- In this cohort of 2,495 children, 2,259 (90.6%) received first aid involving running water, but only 1,780 (71.3%) were given the adequate duration
- A total of 236 children (9.5%) required grafting. The odds of grafting were decreased in the adequate first aid group (odds ratio [OR] 0.6; 95% confidence interval [CI] 0.4 to 0.8)
- The provision of adequate running water was further associated with reductions in full-thickness depth (OR 0.4; 95% CI 0.2 to 0.6), hospital admission (OR 0.7; 95% CI 0.3 to 0.9), and operating room interventions (OR 0.7; 95% CI 0.5 to 0.9), but not hospital length of stay (hazard ratio¼0.9; 95% CI 0.7 to 1.2; P¼.48).

Conclusions:

- Burn severity and clinical outcomes improved with the administration of cool running water.
- Adequate first aid must be prioritized by out-of-hospital and emergency medical services in the preliminary management of paediatric burns.

Key message: The provision of adequate first aid consisting of greater than or equal to 20 minutes of cool running water within 3 hours of injury was associated with reduced skin grafting, as well as faster re-epithelialization among burns in which wound closure was more protracted, and decreased odds of full-thickness depth, hospital admission, and operating room interventions.

EXPERT COMMENT

"In this cohort study, the odds of skin grafting were decreased among children who had 20 minutes of cold running water (odds ratio 0.6; 95% confidence interval 0.4 to 0.8). Although this study establishes only association, in the absence of better-evidence first-aid guidelines, paediatricians should promote 20 minutes of cool-water irrigation for burns in children."

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With warm regards,

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Reference
Bronwyn R.G.; Cody C.F.; Franz Babl; Ed Oakley. Cool Running Water First Aid Decreases Skin Grafting Requirements in Paediatric Burns: A Cohort Study. Annals of Emergency Medicine. January 2020; Volume 75, no. I; doi.org/10.1016/j.annemergmed.2019.06.028