706 High Versus Low Dose Vitamin C in Burn Care

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Introduction: While vitamin C is a regular part of burn management, there is no consensus on the most effective dose for a reduction in mortality, fluid resuscitation requirement, and other various clinical benefits. In this study, we aim to evaluate the potential protective effects of a higher dose of intravenous vitamin C in burn patients with greater than 40% total body surface area (TBSA) as compared to the effects on low dose oral vitamin C with lower TBSA burns.
Methods: A total of 54 subjects were retrospectively reviewed with burns greater than 20% TBSA from January 2018 to 2021. In our burn unit, patients with smaller burns were given 2,500 mg PO vitamin C and larger TBSA burns were given 15,000 mg IV vitamin C within 72 hours. During this period, we found 40 patients in the low dose group and 14 patients in the higher dose group. Demographics, length of stay, length on a ventilator, fluid requirements, number of procedures, days to the first infection, and mortality were compared using the Chi-square test.
Results: We found that there was a significant difference in the degree of burn on admission and reassessment between the dosing groups (30% vs. 48%, $p = 0.006$; 32% vs. 57%, $p < 0.001$). Overall fluid requirements for the first three days (9 liters vs. 25 liters, $p < 0.001$), length of stay (13 days vs. 38 days, $p = 0.011$), length on a ventilator (2 days vs. 13 days, $p < 0.001$), and total procedures required (1 vs. 5, $p = 0.014$) were also significantly higher in the group given the IV dose. No significant difference in other outcomes such as days until first infection and mortality rate were found, ($p=0.451$ and 0.326, respectively).
Conclusions: Parameters that were statistically significant were consistent with the higher burn TBSA. Despite the group with larger surface area burns to require much higher fluid requirements (25 liters vs. 9 liters in 72 hours), high dose IV vitamin C may have been protective since the outcomes of days until first infection and mortality rate had no significant difference compared to the group with the smaller TBSA burn which should have predictably better outcomes. This clinical study supports other studies that high dose vitamin C may improve outcomes from a reduction in capillary leak to mortality but an adequately powered randomized prospective approach is needed to better define the benefits as well as dosing.

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707 Invasive Non-Candida Fungal Infections in Acute Burns: A 13-Year Review of a Single Institution

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Introduction: Burn patients have higher infection rates due to loss of the protective skin barrier. The past decade shows increased rates of burn infection with atypical invasive fungal organisms. After a recent trend of life-threatening atypical fungal burn infections at our hospital, we conducted this study to further characterize this.
Methods: We identified patients admitted to our burn center from January 2008 to June 2021, who developed fungal non-***Candida*** burn infections while admitted. We gathered demographic data, burn injury details, surgical treatment course, and fungal and bacterial infection data. Descriptive statistics were used to characterize the data and identify trends.
Results: We identified 37 acute burn patients with atypical invasive fungal infections. Of these, 28 were infected with 1 species, and 9 were infected with multiple fungi.
Non-Candida fungi included Aspergillus (20), Fusarium (8), Mucor (6), and 11 other species. Three fungi were resistant to antifungals including amphotericin B. Other organisms included Candida (18), Enterococcus (13), Pseudomonas (9), and 19 other species. On average, patients were infected with 5 bacteria, had 13 antibacterial resistances, and required 6.5 antibacterials. There was one case of total-drug-resistant Pseudomonas aeruginosa. Every patient required Infectious Disease consultation. Eight patients became bacteremic and 1 became fungemic.
The average burn surface area was 35%. All patients required excisional treatment, with an average of 7 excisions, 7 coverage procedures, and 3.5 other procedures; 44% of patients required amputations for infection control. The most common complications were graft loss (39%), ventilator-associated pneumonia (28%), and death (28%). The median length of stay was 40 days (IQR = 89) for survivors and 28 days (IQR = 14) for nonsurvivors. All fatalities were from overwhelming polymicrobial infection. The average modified Baux score was 73 (± 28) for survivors and 102 (± 38) for nonsurvivors. All nonsurvivors had clean wounds without penetrating trauma.
Conclusions: Burn patients with atypical invasive fungal infections have severe polymicrobial infections and extreme

antibiotic resistance. Patients may require, or fail, treatment with last-line antibiotic therapy and amputation. Early Infectious Disease consultation and aggressive treatment is critical. Further research may elucidate risk factors and ideal treatment patterns.

708 Serratia infections in burn care

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Introduction: Burn wound infections, ventilator associated pneumonia, line sepsis and urinary tract infections are common in patients with major burn injuries, and remain prominent causes of morbidity and mortality. Within the spectrum of organisms responsible for infections, some are more common, while others might be relatively more virulent. This study sought to determine the impact of Serratia infections within the context of a verified regional burn centre.

Methods: All patients admitted with a diagnosis of burn injury who developed an infection with Serratia Marcescens in the six years between 1 January 2015 and 31 December 2020, from any site, were included in the study. Data collected included demographic details, mechanism and extent of the burn, as well as the clinical course and complications.

Results: Twenty two patients were included in the study, with a mean age of 46.5 years (range 27-70). Most had at least one significant co-morbidity. The mean burn size was 28% TBSA (range 2% - 71%), nine sustained inhalation injury and 13 required mechanical ventilation. Most patients underwent several surgeries (mean 3.4, range 1-9). The mean duration of hospital stay was 32.2 days (range 8-65), or 1.8 days per percentage burn (range 0.73 -4). For those who died, the mean number of days from admission to diagnosis of Serratia infection was 3.8 days (range 2-7), as against 10.11 days (range 1-27) for survivors. Eight of the first cultures were from sputum, 11 wounds, 4 blood cultures, and 1 from the urine. No significant resistant strains were identified, and all patients received timely and appropriate antibiotic therapy. Five of the patients died.

Conclusions: Patients with major burn injuries are especially vulnerable to morbidity and mortality should they develop a systemic Serratia infection early in their hospital stay. Awareness of the natural history of these infectious episodes may improve the directed therapy required to improve outcomes.