

519 **Congruence of clinical suspicion of invasive fungal wound infection and biopsy positivity in burn patients**

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**Introduction:** Invasive fungal wound infection (FWI) in burn patients is a high-mortality complication; early diagnosis and treatment may improve outcomes. Management of suspected FWI includes initiating broad-spectrum antifungals, obtaining a biopsy for histopathology and culture, and performing urgent surgical excision. However, the relationship between clinical suspicion (manifested by initiation of antifungals) and histopathological diagnosis is unknown.

**Methods:** Patients admitted between 2004 and 2019 to our burn center, and initiated on any systemic antifungal, were identified. The electronic medical record (EMR) was reviewed to determine the indication for such therapy. Patients were included if antifungals were initiated out of concern for FWI. If the indication was not clear, patients were included if the systemic antifungal agent(s) initiated were triazoles (not fluconazole), echinocandins, or amphotericin B.

**Results:** Two hundred one patients who received 251 courses of broad-spectrum antifungal therapy were included. Thirty six patients (17.9%) received more than one course of antifungal therapy. One hundred sixty five (82%) patients were male, with an average age of  $41.1 \pm 17.7$  years. The average burn size was  $49.7 \pm 22.8\%$  total body surface area (TBSA) and 60 (29.8%) patients had inhalation injury. The median time from injury to antifungal initiation was 17.5 days (IQR 10.7, 38.6 days).

One hundred sixty eight biopsies were obtained within 3 days of antifungal initiation. Seventy five biopsies showed FWC (44.6% of biopsies), 37 had FWI (i.e. fungi were identified either in viable tissue or angioinvasion) (22% of biopsies), and 56 had negative biopsies (33.3% of biopsies). Despite presence of fungi on histopathology, there were only 112 positive fungal wound cultures (44.6% of 251 antifungal courses) within 3 days initiation of antifungal therapy. *Aspergillus* was the most commonly isolated genus (n=47) followed by *Candida* (n=46), *Fusarium* (n=26), *Mucor* (n=10), and other (n=20). There were 35 instances where multiple fungal organisms were recovered in tissue culture. One hundred five patients (52.2%) died during their hospital stay; 38 of these patients had FWC, 25 had FWI, 20 had negative biopsies, and 22 did not have biopsies taken.

**Conclusions:** Of 251 systemic antifungal courses initiated out of concern for FWI, FWI was biopsy-proven 14.7% of the time. Antifungal stewardship is needed to better identify appropriate high-risk patients for FWI. The development of a novel criteria or scoring system may be warranted to assist in deciding when to initiate systemic antifungal therapy for FWI in burn patients.

520 **Efficacy of high volume hemofiltration (HVHF) with step-down approach in critically ill burn patients**

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**Introduction:** Continuous renal replacement therapy (CRRT) is the standard of care for critically ill burn patients with acute kidney injury. Historical mortality rates for burn patients requiring CRRT is over 50%. High volume hemofiltration (HVHF) is a purification method that may have superior outcomes in the critically ill but has not been well studied in burn patients. We report results of utilizing HVHF with a step-down approach in our burn center.

**Methods:** Retrospective review of all adult burn patients at a verified adult and pediatric burn center requiring continuous veno-venous hemodiafiltration (CVVHDF) from 2018 to 2021 when HVHF (50ml/kg/hr) for 18-24 hours with a step-down approach (25-30ml/kg/hr) was started. A normocarbica bicarbonate based dialysate was used with blood flow rates of 200ml/hr along with citrate anticoagulation. Demographics, indications and duration of CVVHDF, duration of vasopressor requirements, days on mechanical ventilation, length of stay, correction of acidosis and mortality were recorded.

**Results:** Thirteen patients were identified, of which four were excluded as they had an exfoliative skin disease (two patients) or were treated with conventional CVVHDF (two patients). Of the remaining nine patients (six male and three female) the average age was 58.7 years (range: 42-75) and average total body surface area burn (%TBSA) was 46% (range: 20-92). All patients were diagnosed with AKI (Acute Kidney Injury Network [AKIN] Class III) with the indication for CRRT being diuretic resistant fluid overload in three patients and sepsis in the remaining six patients. Of the three patients with fluid overload, two developed sepsis while on CRRT. Acute respiratory distress syndrome (ARDS) as defined by the Berlin criteria was noted in six patients (66%). Three patients died (33% mortality) with the remaining six being eventually converted to intermittent hemodialysis and progressing to renal recovery. Amongst survivors, the duration of CRRT ranged between 7-33 days (average 13.8 days) and duration of vasopressor support from 1-30 (average 17 days). Metabolic acidosis resolved in all survivors within 48 hours. No hemorrhagic events were noted and all patients tolerated regional citrate anticoagulation well. Reduction in serum creatinine was noted to be significant.

**Conclusions:** High volume hemofiltration resulted in improved mortality rates compared to what is reported in the literature. Further research and comparative studies are required to determine if HVHF with a step-down approach is superior.