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Editorial Open Access

Fungal Burn Wound Infection

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Editorial

The causative organisms of burn wound infection are aerobic and anaerobic bacteria, fungi, and yeasts [1,2]. Viral burn wound infection is rarely reported but does occur. Herpes virus family, including herpes simplex virus and varicella zoster virus, are the most frequent causative agents [3]. However, bacteria are the predominant isolates of burn wound infection. Aspergillus species are the most common cause of fungal burn wound infection [4,5]. Regarding the yeast species, *Candida albicans* is the prevailing cause of burns infection [5-7]. The incidence of fungal infection in burn patients is reported to be 6.3% to 15% [5,8].The extensive use of local and systemic antibiotics is a predisposing factor for fungal and yeast burn wound infections. Districts with warm and moist climate is also increasing the susceptibility for fungal burn wound infection [4]. Burned patients might acquire fungal infection from of burn care units' appendages where the fungal infectious agents are settled in the nearby vicinity of patients such as walls, beds, mattresses, and dressing instruments. *Aspergillus niger* was found to be the most frequent isolate from both burn wounds as well as burn care units accessories. Indicating that the source of fungal infection was acquired from patients' surroundings [4]. Shared use of dressing instruments and dressing tubs could be another source for fungal and yeast infection.

Burn wound dressing is carried out by either open or occlusive method. Open dressing demonstrated more frequent fungal infection that those who were managed by occlusive dressing technique [9]. Open wounds might be exposed to extra airborne fungi as compared to closed ones. On the other hand, yeast burn wound infection was more frequently encountered in occlusive dressing method than those who were treated by open dressing [2]. Wet environment in occlusive dressing enhances yeast growth, flourish and establishment. Fungi and yeasts are usually localize to burn wound surface with or without local invasion. In patients with major burns, invasive fungal burn wound infection is a prominent emerging cause of late onset morbidity and high mortality [10]. They may invade blood stream and causing systemic dissemination. Invasive fungal and yeast infections of deep-burn wound were reported in severely burned patients [11,12]. Candida could invade blood stream in burn patients, which has been associated with high mortality and a prolonged hospital stay. Non-albicans Candida was found to be a significant pathogens in burned patients with candidemia [13]. Fungi might also invade deep tissue and blood stream. It had been reported in severely-ill burned patient that multiple fungal coinfection caused systemic dissemination including the brain [14]. Pythium species were found to be particularly resistant and invasive, requiring early identification to improve survival through rapid, comprehensive surgical interventions [15,16].

Fungal and yeast identification might be missed because specific cultures for these organisms are not routinely employed for all cases. High level of suspicion and fungal culture for suspected cases could overcome the diagnostic obstacles. Fungal culture and direct microscopical examination of specimen assist in revealing the fungi and yeasts. Real-time polymerase chain reaction (PCR) assays is a recent diagnostic methods for an early and non-invasive detection, but they are not available for all fungal organisms, costly, and unaffordable in most ordinary diagnostic laboratories. Burn wound infection with multiple microorganisms is common finding where definitive diagnosis using PCR might be a useful adjunct to guide antifungal therapy. PCR might also prove valuable in identifying unusual pathogens that may not be susceptible to standard antimicrobial regimen [14].

Preventive measures to reduce fungal infection include eradication of moulds and spores, which might be localized in the nearby vicinity of patients in burn care units. Adequate air-conditioning reduces humidity in burn care units that help in reduction of fungal growth and spread. Furthermore, conservative or balanced use of antibiotics for burned patients is also diminish fungal and yeast infection incidence.

Treatment of fungal infection should involve removal of debris and dead tissue from the wounds. Twice daily dressing is also recommended. Systemic and local antifungal agents should be employed especially for invasive infection. Extensive resuscitation, nutritional support, early wound closure, grafting and the administration of effective topical and systemic chemotherapy have largely improved morbidity and mortality rates of burn patients [17].

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