SELECTIVE ENZYMATIC DEBRIDEMENT OF DEEP PARTIAL AND FULL THICKNESS BURN WOUNDS WITH A BROMELAIN-BASED TOPICAL DEBRIDING AGENT - FIRST EXPERIENCES (168)

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Introduction: Burn eschar may differ in appearance and thickness as well as behavior as a result of etiology and time since trauma. Topical treatment modalities also influence eschar formation. Severe and even life-threatening complications can occur associated with burn eschar, especially bacterial infection and consecutive sepsis. This is why an effective and fast removal of burn eschar is the most important point in the treatment of burn injuries to avoid eschar-related complications and to initiate wound healing. An accurate diagnosis of the depth of a burn wound is important, but it can be difficult even for experienced surgeons, especially in mixed-depth burns which occur in the majority of cases. Nowadays, early eschar removal in the first three to four days after injury only seems to be possible via surgery and grafting with autologous skin grafts as a gold standard as it is the fastest method. Hand burns represent a special sub-entity in burn surgery because of the anatomy and functional aspects as well and demand special attention and treatment. Initial assessment should include the depth and extent of the cutaneous injury and the diagnosis of increased compartment pressure or a compartment syndrome. As a consequence, there is a need for an immediate, fast, selective and effective non-invasive debridement agent combining the efficacy of surgery with the non-invasiveness of a non-surgical method, allowing very early, complete, selective wound debridement preserving more healthy dermis for grafting or spontaneous epithelialization and enabling an accurate estimation of burn depth as well.

Methods: Between March and December 2014, we treated 8 patients with mixed partial and full thickness burn wounds with a bromelain-based enzymatic topical debriding agent. Our goals were to determine the efficacy and selectiveness of the method both clinically and histologically and gain first experiences with the technique.

Results: No adverse events such as an allergic reaction to the ingredients of the bromelain-based topical debriding agent or systemic reactions were observed. Temporary fever or elevated inflammation parameters occurred temporarily shortly after debridement in some patients, disappearing completely after a couple of days with no clinical correlation. We observed an effective wound debridement in partial and full thickness burn wounds, not only clinically, but also confirmed by histological results. The method requires experience and has a learning curve concerning the assessment of the wound after debridement to determine the further course of the treatment. Implementation in a clinical routine requires time and personnel. It is a useful diagnostic tool in the assessment of different types of burn depths that coexist in one patient at the same time. Patient selection is very important before application. Patients with comorbidities or conditions that affect wound healing negatively are not ideal candidates for the technique.

Conclusions: Enzymatic debridement with proteolytic enzymes with a bromelain-based topical debriding agent seems to be an innovative method to reach a fast, effective and highly selective debridement of partial thickness and full thickness burn wounds without harming healthy tissue and preserving enough vital dermis. There is a learning curve concerning the assessment of the burn wound after the debridement as well as determining the further course of the treatment concerning further grafting or spontaneous epithelialisation of the wound. The technique might provide...
advantages especially in delicate anatomic or functional regions such as the hand, if grafting and consecutive immobilization can be avoided and functional results can thus be optimized. Patient selection is crucial and has to be conducted thoroughly to achieve optimal results.