Introduction: Rapid debridement of acute deep burns with a novel enzymatic debriding agent containing a mixture of plant origin proteolytic enzymes (NexoBrid™) brought new perspectives into minimally invasive approach to surgical treatment of deep burns. In addition to its rapid debriding action this method of debridement allows early visual diagnosis of the burn depth as well. Bratislava Burn Centre participated in two multicenter clinical studies of efficacy and safety of the new drug. We would like to share our experience with its use for both diagnosis and treatment of acute burns.

Methods: A total number of 22 adult patients were included in the two Phase III studies. The NexoBrid™ arm included 12 patients. Following marketing authorisation of the drug we treated 3 more patients in the year 2015. NexoBrid™ was applied according to instructions for use in clinically diagnosed deep dermal and full thickness burn wounds. The application time was 4 hours, thereafter the dressing was removed, the wound was cleansed, assessed by surgeon and subjected to another 2 hours of soaking for removal of rests of the enzymes. Following final visual wound depth assessment and diagnosis, decision was taken pertaining to further wound care. In cases of partial thickness burns with good spontaneous healing potential, temporary biological skin substitutes including skin allografts, xenografts, or cultured allogeneic keratinocytes. In full thickness burns split thickness skin grafting with sheet or meshed grafts was provided. Subsequent wound care has followed the burn department wound care protocol.

Results: The debridement effectivity in all treated cases was more than 90%. Repeated debridement of some areas was done in one patient only. No serious adverse events or reactions have been observed. The total healing time in deep dermal burns was comparable with the group of standard of care patients (SOC). The quality of scars was at least comparable, or better than in SOC group. One of the great advantages of the rapid and selective burn debridement is, that it allows exact early visual burn depth diagnosis necessary for decision taking for subsequent burn wound care. There were no significant differences in healing times related to use of different kinds of skin substitutes used for coverage.

Conclusions: Early minimally invasive rapid enzymatic debridement of deep burns brought new ideas and practices into burn care. It allows selective removal of necrotic tissues only, with minimal or no blood loss, without a need for operating theatre and team setup, with manageable pain, not doing any harm to healthy tissues. It allows early visual burn depth diagnosis facilitating decisions for subsequent wound care. The most important condition for optimal healing following debridement is to protect the delicate viable tissue structures from desiccation, infection, and assure optimal healing conditions by use of temporary skin substitutes and proper wound care until complete wound closure.

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