

Treatment options for burns with modern wound management

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Case 1.

Day 0



Week 2

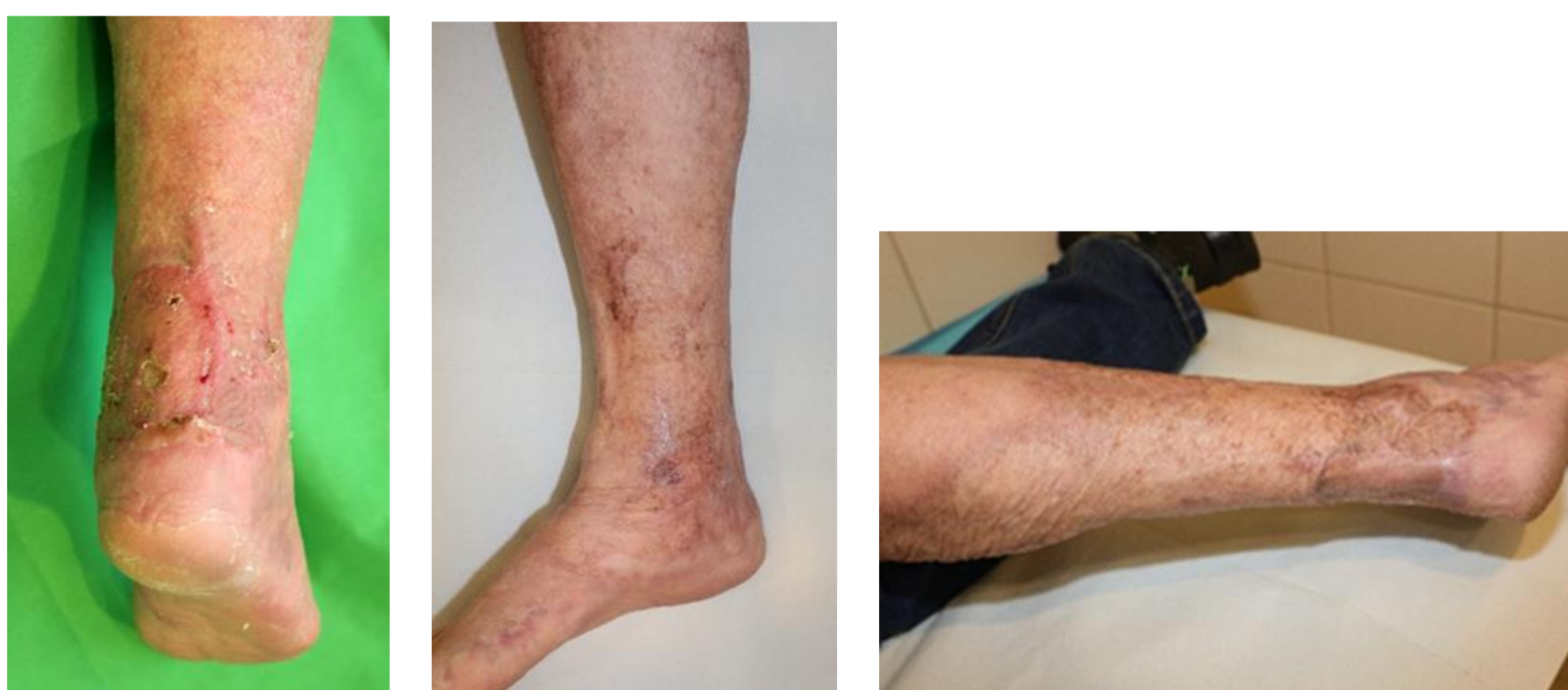


Week 6



Week 8

Week 12



Introduction

Three main types of burns are distinguished according to their depth. First degree burns affect only the upper layer of the skin, the epidermis. Hyperaemia is visible and painful. Second-degree burns affect not only the epidermis but also the dermis layer, either partially or in its full thickness. Third degree burns affect the epidermis, dermis, subcutis or deeper tissues. Some authors distinguish grade IV burns, when deeper tissue, muscle and bone is involved.

Depending on the depth and extent of the burn, several options are available. The most important step in acute care is cooling, which can be carried out with cold running water or cooling gel. Further treatment is by a method appropriate to the condition of the wound. Of course, in addition to local therapy, systemic treatment may be necessary depending on the extent and depth of the burn. For local treatment, hydroactive dressings, alginates, foam dressings are well suited. In deep burns after necrectomy, negative pressure wound treatment (NPWT) can be used for further clearing, and enhancing the granulation. NPWT is also effective for promoting graft adhesion after skin grafting.

Case 1.

Day 0

68-year-old man sick from petrol caused clothes fire, III.degree circular burn.

Week 2

After necrotomy, than necrectomy and split thickness meshed autograft transplantation 70 % of the area is healed.

Week 6

Repeated necrectomy, skin autotransplantation in non-healing areas, application of negative pressure wound therapy (NPWT).

Week 8

The transplanted area almost healed.

Week 12

Complete regeneration with compression therapy and physiotherapy.

Case 2.

Day 0

40-year-old patient with neuropathy and limited mobility. Burns II/B-III due to exposure to hot water.

Special hydroactive wound dressing is used with rinsing and absorption, the sensitive surrounding skin is protected by gauze.

Day 3

This special dressing partly lysed the debris and necrotic tissue, and absorbed it. The wound dressing with rinsing and absorption was used 3 times over 3 days for a total of 9 days.

Day 9

After lysis of the necrotic tissue, debridement was completed, a foam-gel moisturizing wound dressing was applied 5 times with dressing changes every 2 days for a total of 10 days to enhance granulation and epithelialization.

Day 19

Almost complete epithelisation. Impregnated sheet with silver content was used until complete epithelialization. A polymorbid patient with low movement activity, difficulty tolerating hospital treatment. Surgery would have been more stressful, involving complex internal medicine and neurological examination. Treatment without surgery made the wound management much easier for both doctor and patient.

Case 2.

Day 0

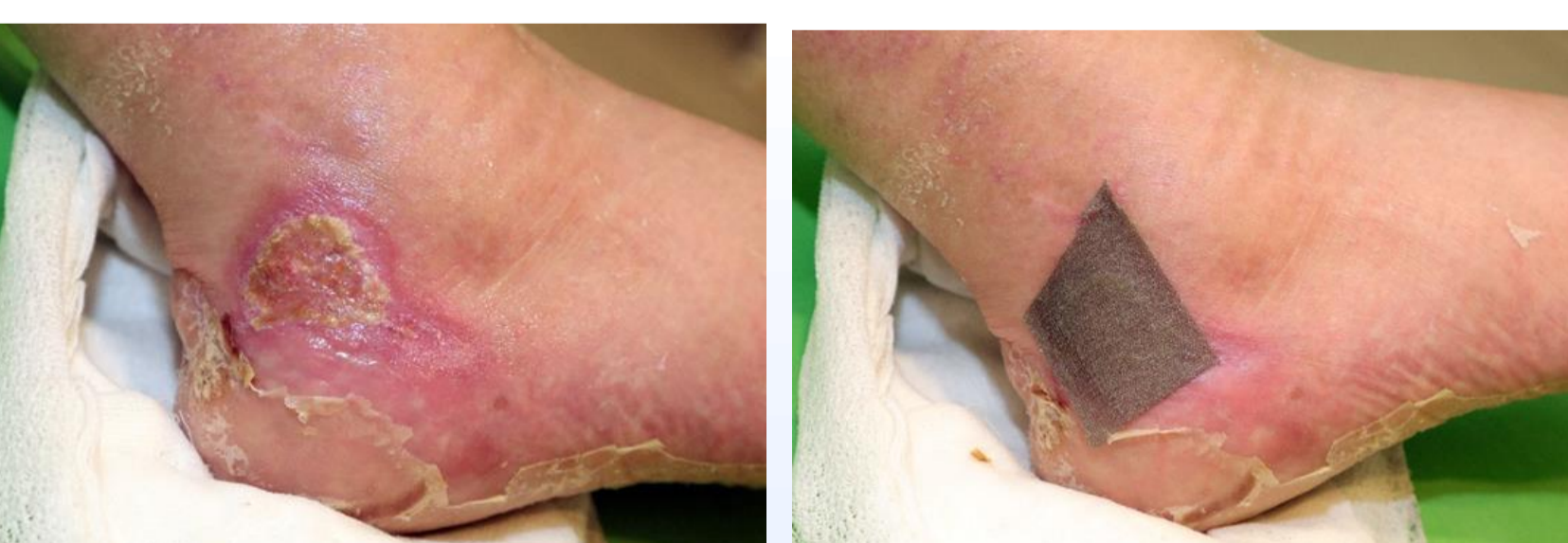


Day 3

Day 9



Day 19



Conclusion

The T.I.M.E. guidelines, with proper Tissue wound bed preparation, Infection control, adequate Moisture, promotion of Epithelialisation at the wound edges and granulation tissue, are also applicable to the treatment of burns. Based on these principles, to dissolve debris, necrotic tissues, a special hydroactive wound dressing can be used by rinsing and absorption. This dressing can completely dissolve small necrosis, loosen extensive necrosis, and thus makes necrectomy easier to perform. To promote granulation tissue, neovascularisation and then epithelialisation, a gel-foam wound dressing can be used. In many cases, hydroactive dressings are effective to treat superficial and partly deep second degree burn with conservative treatment, without surgery. For deep second- and third-degree burns after necrectomy NPWT can be used successfully to enhance granulation and neovascularisation. After split-thickness skin mesh graft autotransplantation NPWT can enhance the healing of the graft.

References

- 1.Powers JG., Higham C., Broussard K. és mtsai. Wound healing and treating wounds: Chronic wound care and management. *J Am Acad Dermatol.* 2016. 74(4), pp. 607–625.
- 2.Hodgson H., Davidson D., Duncan A. és mtsai. A multicentre, clinical evaluation of a hydro-responsive wound dressing: the Glasgow experience. *J Wound Care.* 2017. 26(11), pp. 642–650.
- 3.Szentkereszty Zs, Pellek S, Tóth Cs: NPWT, ISBN:9786150050898