K. Ott, U. Diener: Treatment of therapeutically resistant wounds with hyaluronan combined with bactericidal agent (Hyaluronan Iodine Complex) First time experience in Switzerland

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OBJECTIVE
The treatment of chronic wounds is often difficult. Hyaluronan combined with an antibacterial agent is a new treatment which shows promising results.

CASE 1

07.14.4 a October 2009: presentation of a diabetic foot with infection of the big toe. Infectious process is in the 2nd toe. The infection extended rapidly to the distal part of the anterior foot, the toes and the opposite toes. Amputation of the foot was performed with Negative Pressure Therapy. Development of superficial necrosis due to delayed debridement. Picture shows wound post-debridement.

After 18 days treatment with Hyaluronan®
After 64 days treatment
16 weeks after operation. Scar tissue is stable. Orthopaedic shoe fitted.

METHODS

Treatment of 15 patients May to November 2010 with Hyaluronan-Iodine Complex (Hyaluronan®). The kind of wounds were diabetic or venous ulcers and infections after traumatic lesions. Mainly hydroactive dressings were replaced with Hyaluronan® dressings. On average every 3 days, the dressings were changed. We applied hyaluronan soaked gauze, alginate, or hydrosorbs.

RESULTS

In 6 patients the wounds were almost closed within 2 weeks of the first application of Hyaluronan®, in 2 patients after 8 weeks and in one case in 16 weeks.

In 6 patients the procedure had to be changed. 2 nonresponders: 4 organisational problems.

In 2 cases a major amputation and in 1 case a minor amputation were performed. The effect was not only the formation of granulation tissue in addition there was rapid and good quality skin growth.

NB: Best results were achieved with application of Hyaluronan® soaked cotton gauze and also in ischaemic wounds.

SIDE EFFECT
We saw a better perfusion and significantly reduced pain. No toxic reactions to the iodine were noted.

LITERATURE


CASE 2


11-03-11: After local debridement. Initial treatment with antiseptic gauze, followed by saline.

05-03-10: Beginning with Hyaluronan® because of loosing perineal skin to bone and stagnation of wound healing.

10-03-10: The wound is completely closed after 11 days of treatment.

Hyaluronan

Characteristics of Hyaluronan
- Important for connective tissue
- High capacity of water accumulation relative to its mass
- Important factor in proliferation and migration of the cells (granulation tissue)
- High viscosity, barrier for microorganisms
- Bond of radicals: Protection against UV-radiation
- Support of remodeling new vessels (regulation of cytokines)

Role of Hyaluronan in process of wound healing

PHASE OF WOUND HEALING

SURGICAL STAGE
- Early inflammatory stage
- Wound bed
- Wound cavity

FUNCTIONALITY
- Cell proliferation
- Granule formation
- Inflammatory activity
- Hypoxia
- Neutrophilic infiltration
- Connective tissue formation
- Hydrophilic activity
- Re-epithelialization
- Re-modelling

FEATURES
- Reduced rate of infection
- Prevention of scar formation
- Support of re-epithelialization
- Prevents the formation of granulation tissue
- Prevents the formation of foreign body reactions
- Prevents the formation of keloid formation
- Prevents the formation of scar formation

Features of KIs
- Penetration in cell wall
- Interruption of protein synthesis
- Induction of macrophages and T-helper cells (1)
- Inactivation of bacterial forming hyaluronidase (Staph. aureus a.o. Species) (2)

CONCLUSION

Hyaluronan-Iodine Complex is a very promising alternative in the treatment of static chronic wounds, especially when ischaemic tissue is contaminated. Even imminent amputations were prevented.

In most cases it was not necessary to perform an autograft.