

Satellite Symposium "Myth or reality in chronic wound management"
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Improvement in wound management How to make the right choice for best care?

Balancing medical needs, patients' demands and quality of life on one side and decisions of deciding authorities on the other side, adequate wound care is a highly challenging task. Successful treatment of chronic or complex wounds depends on the hygienic state of the wound, properly performed wound bed preparation, the choice of adequate wound dressings, the therapist's experience and the condition of the individual patient. How to assess the complexity of wounds? How to perform proper wound bed preparation? And which aspects should be considered when choosing the correct dressing for a wound? These issues were the focus at the B. Braun symposium of the European Wound Management Association (EWMA) congress.

Given the aging population, the growing number of complex wounds and the increase in multi-drug resistant infections, an improvement in wound healing is a central issue in healthcare. Wound care management should be patient orientated, cost effective and evidence-based. In terms of complexity, wounds can be divided into three types, Prof. Dr. Luc Téot, Montpellier/France, said in the introduction to the symposium: wounds which are easy to heal when best practices are administered, those which are difficult to heal showing recurrence and poor compliance, and wounds which are extremely difficult or even impossible to heal, often occurring in association with malnutrition or cancer. Thus, the expected time to complete healing is a relevant aspect of complexity.

Prof. Dr. Gerit D Mulder, San Diego/USA, gave an overview over the current guidelines on wound bed preparation (WBP) and the information available on the role of biofilm in delayed wound healing. The concept of WBP has gained international recognition as a framework providing a structured strategy for wound management. To accelerate endogenous healing or to enhance the effectiveness of other therapeutic approaches, the International Advisory Board for Wound Bed Preparation has developed the so called TIME-concept which includes the following issues [1]:

- Tissue, evaluation of necrosis or non-viable tissue
- Infection/Inflammation
- Moisture balance
- Epithelial advancement

The WBP concept allows the clinician to focus systematically on all of the critical components of a non-healing wound. However, the biggest concern is the differentiation between infection and inflammation, Mulder accentuated. "Even small amounts of bacteria will have a significant impact on protease levels and subsequently on the development of infection." The major question, however, is if antimicrobial agents are needed for infection. Treating wound infections is different than treating other infections, Mulder pointed out. Not only the choice of antibiotic can differ, but it has to be differentiated between contamination, colonization and infection before choosing the appropriate therapy. Treating non-infected wounds with antibiotics as a preventive measure has not shown to accelerate healing and may lead to resistance.

An essential component of the WBP concept is the debridement. According to Mulder, almost all guidelines recommend wound debridement, because necrotic tissue increases the bacterial burden of the wound and can impair wound healing. The techniques of debridement are surgical, enzymatic, autolytic mechanical and biological. But even with surgical excision and debridement small quantities of bacteria can remain in the wound bed and subsequently redevelop heavy colonisation and biofilm formation, Mulder said.

Role of biofilms in chronic wounds

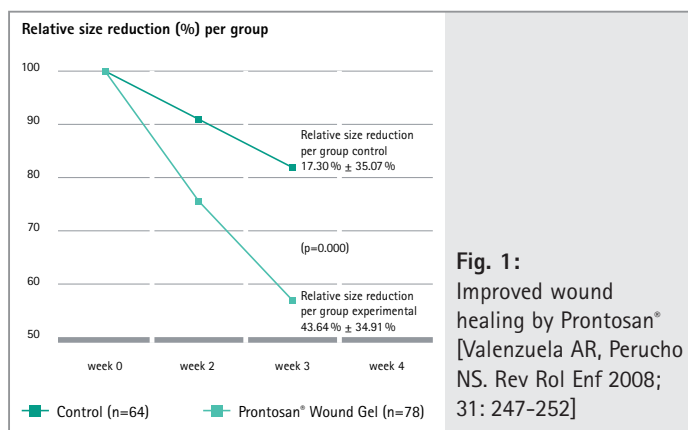
A biofilm is an accumulation of microorganisms which are embedded in a polysaccharide matrix. The longer the biofilm is present the more resistant it becomes to antibiotics [2]. In chronic wounds, biofilms are involved in protecting bacteria from host defenses and antimicrobial medications by creating a shield of exopolysaccharide that is difficult for the immune system and antibiotics to penetrate. In the first stage during the development of biofilms, cleansing will effectively remove planktonic free floating bacteria. Biofilm grow very rapidly: If a few bacteria remain after debridement or even after surgical excision, they show growth already after 3 hours. Within 5 hours, they form aggregates in the wound, but are still sensitive to cleansing. After 10 hours, the beginning of film can be observed. Within 2 weeks, the film is firmly established and at 4 weeks it becomes difficult to eradicate the biofilm. Considering the rapidity of biofilm

growth, efforts to prevent biofilm formation should be undertaken soon after a wound is created.

How to achieve effective eradication of biofilm

The key point in wound management is to cleanse wounds before and after dressing changes, Mulder pointed out. "It is the regular removal of bacteria that prevents the establishment of biofilms which subsequently can promote healing." The combination of polihexanide and betaine (Prontosan®) is an efficient and safe cleansing agent. Polihexanide is a broad spectrum antimicrobial appropriate for decontamination of critically colonized wounds. Betaine is a surfactant which decreases surface tension on the wound allowing for the removal of debris.

A multicenter, randomized study has shown that the Prontosan® Wound Gel significantly improved both wound healing determined by reduction in wound size (Fig. 1) and pain control compared with a placebo [4]. A further study has demonstrated advantages in reduction of wound pH which is a surrogate marker for bacterial burden by Prontosan® Wound Irrigation Solution in comparison to normal saline [5]. Moreover, pain during treatment of venous leg ulcers before and



after 4 weeks of treatment with the polihexanide/betaine was reduced. "The reduction of pain becomes particularly important when dressings are removed", Mulder emphasized. A large retrospective study with 953 cases has confirmed improved wound healing [6]: In 80 % of wounds with improved wound healing wound closure was achieved by Prontosan® Wound Irrigation Solution and Gel. In addition, wound odour was reduced in two thirds of the patients. "Polihexanide in combination with betaine meets all criteria for an ideal WBP agent by optimizing the wound environment", Mulder concluded.

New challenges for chronic wound dressings

Tissue adherence leading to pain during dressing removal and contact dermatitis are the major disadvantages of gauze dressings, Dr. Sylvie Meaume, Paris/France, reported. For the majority of chronic wounds moist wound healing is recommended. "The problem of moist wound healing is not moisturisation, but the control of moisture bal-

ance", Meaume said. But by use of new high technology products the amount of the exudate can be effectively controlled. Hydrocolloids are the most widely used modern dressings. In the presence of exudate, they absorb liquid and form a malodorous gel. Foam does not produce a malodorous gel and is more absorbant than hydrocolloids. Alginates/hydrofibers provided a high absorption of exudate by formation of a strong hydrogel. Hydrogels are useful dressings for dry, sloughy or necrotic wounds. However, according to Meaume they are reserved to wounds with a light amount of exudate. "You have to select the appropriate secondary dressing to put on the hydrogel. If possible this requires a non-absorbent dressing", she explained. Moist wound therapy such as alginates, hydrocolloids and foams may be used for simple acute and chronic wounds. "I think we need alginates, hydrocolloids, foams and hydrogels to promote natural healing conditions", Meaume commented. The use of moist wound dressings is supported by growing evidence as acknowledged by leading authorities (e.g. HAS, IQWiG).

For complex, large and chronic wounds, in contrast, high technology dressing should be the first choice. Modern silicone adhesives have the major advantage of comfort for the patient and allow for atraumatic dressing removal. Thus, silicone wound contact layers may prevent pain, bleeding and surrounding skin damage. Silver has been provided for efficient control of bacterial load and local infection. Dressings containing ionic silver are very efficient for bacterial reduction in local infections and are complementary to wound cleansing with polihexanide/betaine.

The different local treatments which can promote healing demonstrate an overlap between wound dressings which are devoted to treat simple chronic wounds and also some acute wounds and vacuum therapy which is considered as a complement to surgery and used for the treatment of difficult to heal wounds. Usually this treatment is more suited for hospital use than for community target groups. Furthermore, there is a higher amount of complex and non-healing wounds. "You need expertise to find the appropriate treatment for each wound", Meaume said. The Askina® product range provides a broad range of dressings with different technologies for each phase of the healing process. The choice of the right product at the right time for the right wound can improve wound healing and quality of life while limiting complications and costs.

Literature

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