Innovations in dressing technology for leg ulcer patients

Achieving the best possible wound care when treating leg ulcers creates challenges for the clinician. These include providing appropriate compression, managing exudate and controlling infection. The author describes how new developments in bandaging and dressing technology are helping to achieve effective leg ulcer management in one German hospital.

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INTRODUCTION

The author works in a group of three hospitals near Stuttgart in southern Germany and is responsible for wound care management. The largest of the three hospitals, the Klinikum am Steinenberg, has 540 beds and in 2010 treated 725 wound patients, of whom 60% had leg ulcers.

CHALLENGES OF BANDAGE APPLICATION

Achieving optimum pressure when applying compression to leg ulcer patients creates challenges for the clinician. The pressure is often either too weak or too strong to be effective and only a few clinics have a system available to measure the applied pressure.

Training is clearly a major factor for optimising bandage application and, for some time now, it has been accepted that compression workshops in clinics are beneficial and should be ongoing. The author's clinic hosted two workshops in 2010 and will be repeating them next year. These were organised in collaboration with the department of physical therapy and were composed of a lecture on the theoretical basics of compression bandaging (based on case studies), followed by a practical session in which the participants themselves were able to apply bandages.

After those workshops, an improvement in outcomes was observed, as compression bandages applied by staff in the clinic stayed in place more efficiently, especially on mobile patients. When teaching and applying compression therapy the clinic follows the World Union of Wound Healing Societies (WUWHS) recommendations[1].

These workshops will be repeated in 2012. In each workshop, bandage pressure will be assessed with a special device (PicoPress®, Microlab Elettronica), which uses a sensor placed under the bandage to measure pressure exerted by compression in both static and dynamic conditions. Afterwards this data can be downloaded and analysed.

Bandages that have visual indicators, (such as ProGuide® [Smith & Nephew] or K-Two® [Urgo Medical]) may help with applying adequate tension. In a study in 2008[2] it was shown that compression bandages with visual indicators were applied more accurately than bandages without indicators. In the author's hospital, feedback from colleagues demonstrated that they now feel more secure in applying the correct amount of compression since these bandages have been introduced. These types of bandages are also self-adherent, which means they stay in place more easily.

DRESSINGS UNDER COMPRESSION

Another challenge of compression and leg ulcer management is providing appropriate wound management. This involves choosing appropriate dressings that fit underneath the compression and which can absorb excessive exudate and protect the surrounding skin.

In recent years, the development of wound products that incorporate superabsorbers, such as dressing pads (ie Sorbion® Sachet S, Sorbion) and silicon laminated foam dressings (ie Cutimed® Siltec®, BSN Medical) has been a notable advance. These dressings help to manage and absorb exudate effectively,

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Expert Commentary

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No accepted method currently exists for accurately predicting the risk of infection developing in a chronic wound. In order to address this gap, the Wounds At Risk (WAR) score was devised through a consensus group of European interdisciplinary hygienists/microbiologists, surgeons, dermatologists, wound healing and infection prevention clinicians[1]. The objective was to aid early decision making in the use of antimicrobials, specifically the topical antiseptic polyhexanide, to prevent progression to local or systemic infection.

The WAR score is flawed by not having been derived from logistic regression data analysis or Bayesian probability, for example, which may have given more reliable scores. However, such internationally sourced accurate data has never been collected and made available for statistical analysis — hence the decision by the group to devise a score based on the weighting of infection risk based on best current evidence and collective experience.

The WAR score considers the quantity and virulence of the pathogenic bioburden in a chronic wound together with the patient's immune competence. The microbiological continuum of contamination-colonisation-critical colonisation-local and systemic infection is also discussed, acknowledging that the diagnosis of infection is essentially clinical. The quantitative microbiological assessment of colonisation/infection is also considered and the difficulties of using a guide value of 10^5/g of tissue is highlighted. The drawbacks of microbiological sampling are, of course, legion and many microbiologists will not respond to requests to process a swab without consultation as they are aware that providing sensitivities to bacteria, which may be related to irrelevant transients or contaminants, often leads to inappropriate antibiotic therapy.

Wounds at risk are classified as being in two groups — those with endogenous factors (the patient's immune competence) and those with exogenous factors (the quantity and pathogenicity of organisms and their susceptibility to antimicrobials). Points are allocated in the WAR score in three categories of at-risk wounds:

- **Class 1 (allocation of one point): based on the presence of metabolic diseases such as diabetes, cancer and its therapy, contamination and poor personal hygiene, long hospital stays, age, wound size and duration**
- **Class 2 (two points): severe immune defects, such as AIDS, and contaminated traumatic wounds**
- **Class 3 (three points): large burns, presence of foreign material, or extensive heavily contaminated wounds.**

After all the risk factor points are added (and there may be more than one point scored in each class) the risk score is derived. When the WAR score is greater than 3, the use of topical antiseptics is indicated. However, no detailed advice is proffered on the use and timing of antibiotics.

In conclusion, the WAR score is a clinical guide for the early, and justified, use of topical antiseptics, specifically polyhexanide, in chronic wounds. There are no indications for debridement, nor any recognition of biofilm presence, which might require added intervention to optimise the value of topical antiseptics.

When diagnostics are available to detect the presence of biofilm or critical colonisation, WAR may become more helpful. However, there has been no validation of the use of the WAR score so far. The weightings have been derived from expert consensus opinion, rather than statistically derived data, and the score does needs a clinical study to prove its worth. However, WAR scores can already be used for classification and audit in wound care.

References

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allowing for longer intervals between dressing changes.

INFECTION

Another major challenge is the management of infected leg ulcers. Emerging evidence in relation to the presence of biofilms[3] has currently led to revision of the treatment strategy for infected wounds in the author's clinic.

Here, a wound swab is taken from every new patient and the presence of bacteria (including Methicillin-resistant *Staphylococcus Aureus* [MRSA]) and fungi is monitored as well as C-reactive protein (CRP) levels in the blood. The team is also currently considering introducing the WAR (Wounds At Risk) score[4] in order to detect wounds at risk of infection at an early stage (See *Expert Commentary*, left).

When a wound is infected the clinic's protocol requires daily debridement for a period of 3–5 days. This is either performed surgically or with the aid of an ultrasound device (ie Sonoca, Söring).

Following debridement, a hydrophobic bacteria-binding dressing pad is used to cover the wound (Cutimed® Sorbact®, BSN Medical). Bacteria-binding dressings are used because they contain no active antiseptics, which can be absorbed by the wound and become harmful over time.

This means that these dressings can be used for an extended period and are suitable for younger patients[5]. Similarly, there is no evidence of allergic reaction or bacterial resistance with these dressings.

CONCLUSION

To ensure that patients receive optimum treatment, expertise in treating chronic wounds is needed across all hospital departments.

The author's clinic now boasts 10 qualified wound experts who meet on a quarterly basis to exchange new information and serve as the conduit in their departments for ensuring that wound care best practice is disseminated around the hospital.

AUTHOR DETAILS

Astrid Probst is a wound care specialist nurse in Klinikum am Steinenberg Hospital, Germany.