Diabetic Ulcer

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The Subject

A 53 year old gentleman was admitted to hospital with multiple ulcerated areas on the plantar surface of his right foot.

Medical history

Upon admission, a full review of the subject's medical history revealed that he was a diabetic (type II diabetes) who also suffered from polyneuropathy, cardiac insufficiency and liver damage. He was also markedly overweight.

Findings on admission

Examination of the foot revealed the presence of an area of necrosis, measuring approximately 3.5 cm x 1 cm, located on the plantar surface over the 2nd, 3rd and 4th metatarsal heads.

Ulcerated areas of varying size and severity were also noted on the under surface of his great toe (hallux) and third and fifth toes. The wounds, which had all been present for over 12 weeks, were found to be covered with dry necrotic tissue and consequently produced no exudate or odour (Fig. 1).

Procedure/Treatment

Appropriate medication was provided for the control of his diabetes, and as microbiological investigations revealed the wound was infected with Staphylococcus aureus, intravenous antibiotics were administered for ten days according to our hospital's local protocol.

Wound treatment consisted of surgical debridement followed by irrigation with Prontosan, a solution containing an antimicrobial agent, polyhexanide (0.1%), together with a surfactant.

In the initial stages the wound was also subjected to periods of wet to dry cleansing as described by Kammerlander.[1] This technique may be used as an alternative to irrigation to facilitate the removal of debris and microbial cells, whilst helping to relieve itching and inflammation.

The wound was dressed with Cutimed Siltec which was changed every three-four days. On the second change the main wound, which by now was producing copious amounts of exudate, had a healthy appearance with some early evidence of the production of new granulation tissue around the inner margins. The small wounds on the toes were virtually healed at this time (Fig. 2). Further Cutimed dressings were applied and changed as required, normally at four-day intervals.

The patient was discharged from hospital after 2 weeks at which point he received a walking aid to reduce weight bearing on the affected area. By the fifth dressing change (which was undertaken by the patient himself) the wound had reduced dramatically in size and exudate production had greatly diminished (Fig. 3).

A week later the wound had healed completely (Fig. 4) at which point orthopaedic footwear was prescribed to prevent recurrence.

Discussion

According to Wild et al.,[2] in 2000 the prevalence of diabetes for all age-groups worldwide was estimated to be 2.8%, a figure which is expected to rise to 4.4% by 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. This increase is due largely to the increase in the proportion of people over 65 years of age. Diabetes is more prevalent in men than women, but there are more women with diabetes than men. According to one study published by Gordois et al.,[3] approximately 15% of patients with diabetes will develop at least one foot ulcer during their lifetime, and of these a significant proportion (possibly in excess of 15%) will result in an amputation of the toe, foot or leg.

The management of diabetic ulcers therefore presents a particular problem to the healthcare professional as such wounds can become easily infected and generally show little propensity to heal because of the associated vascular disease. A recent systematic review of the treatment options for infected diabetic foot ulcers[4] provides little useful practical advice on the treatment of this condition as the authors concluded that "there was no strong evidence for recommending any particular antimicrobial agent for the prevention of amputation, resolution of infection or ulcer healing".

Fig. 1:
11. 12. 2007

Wound on admission showing ulcerated areas on the foot covered with necrotic tissue.

Fig. 2:
18. 12. 2007

One week later following surgical debridement, the wound base is looking healthy with some early granulation tissue present.

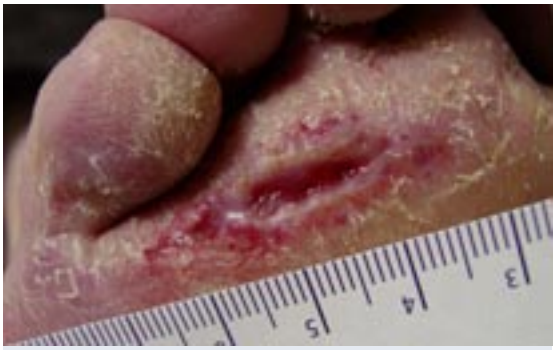

Fig. 3:
4. 1. 2008

At the fifth dressing change (carried out by the patient himself) the wound base is covered with granulation tissue and a large area is also covered with new epithelium.

Fig. 4:
13. 1. 2008

At the seventh and final dressing change the wound was found to have healed completely.

Prompt and appropriate intervention is considered to be key to the successful management of ulcers associated with diabetes, and the present case study illustrates how surgical debridement followed by the use of an appropriate topical treatment and the application of an appropriate dressing brought about rapid healing in the wound of one patient despite the existence of other complicating factors. The Cutimed Siltec dressing meets several of the important requirements of an 'ideal dressing' as previously described.[5]

Specifically it

- Is free of toxic or irritant extractables
- Does not release particles or non-biodegradable fibres into the wound
- Forms an effective bacterial barrier (effectively contains exudate or cellular debris to prevent the transmission of micro-organisms into or out of the wound)
- Forms an effective water-resistant seal to the periwound skin, but is easily removable without causing trauma or skin stripping
- Maintains the wound and the surrounding skin in an optimum state of hydration (this implies the ability to function effectively under compression)
- Requires minimal disturbance or replacement
- Provides protection to the periwound skin from potentially irritant wound exudate and excess moisture
- Produces minimal pain during application or removal as a result of adherence to the wound surface

The excellent fluid handling properties of Cutimed Siltec, a feature of the dressing's considerable but controlled permeability to water vapour, and its skin friendly silicone wound contact surface were considered to be of particular benefit in the treatment of this patient and were judged by the nursing team to have made a significant contribution to the successful treatment outcome.

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