An Evaluation of a Foam Dressing Impregnated With 0.5% Polyhexamethylene Biguanide (PHMB) Within the Care Pathway of the Diabetic Foot Ulcer

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Introduction

The incidence of diabetes is increasing in the United Kingdom, and consequently so is the incidence of associated foot complications. While neuropathic ulceration has always been the most prevalent type of foot ulcer, there is now an increase in tissue damage where neuroischaemia is a contributory factor[1]. In a recent publication, the challenge of providing Podiatry Services within Primary Care to detect early complications and effectively manage these wounds was described[2] . The article considered the need for adequately trained staff and access to a multi-disciplinary foot team as essential to manage these patients effectively.

Within Portsmouth Primary Care Trust, the aim of the Podiatry Service is to provide accessible high quality care for this group of patients. Staff have access to a range of advanced techniques to support wound healing, such as Versajet® Hydrosurgery System (Smith & Nephew UK Limited, London, WC2N 6LA, UK) and Venturi™ Negative Pressure Wound Therapy System (Talley Group Limited, Hampshire, SO51 9DQ, UK), and are encouraged to consider the appropriate use of topical antibacterial dressings where there is a clinical need. An example of one such dressing is the Kendall™ AMD antimicrobial foam dressing (Tyco Healthcare Group LP d/b/a Covidien, Mansfield, MA, 02048, USA), a foam dressing that is impregnated with the antimicrobial agent polyhexamethylene biguanide (PHMB).

Case Study 1

A fifty-six year old, Type 2 diabetic female underwent an amputation of her left hallux following infection sustained in a neuropathic ulcer. She presented to the clinic and underwent synergistic Versajet® Hydrosurgery System and NPWT using the Venturi™ Negative Pressure Wound Therapy System (NPWT). Following 10 days of NPWT, this device was removed and the wound was dressed with Kendall AMD antimicrobial foam dressing . The wound responded well to this treatment, with the patient verbalising comfort and satisfaction at the outcome of this progression. At six weeks of treatment, the wound was observed to be healed (Figures 1 – 4).

Figure 1: Wound on presentation June 2008

Figure 2: Wound following debridement

Figure 3: NPWT in situ

Figure 4: Wound at the end of evaluation

Case Study 2

A sixty-two year old female with Type 2 diabetes and neuropathy of the feet developed a lateral ulceration (Texas grade BII3 [3]) over her left 5th metatarsal head. The ulcer was debrided and the wound bed prepared in the community podiatry clinic using Versajet® Hydrosurgery System. The ulcer was then dressed with Kendall AMD antimicrobial foam dressing and, following 5 weeks of treatment, progressed to healing (Figures 5 – 7). This facilitated an earlier return to work for this patient.

Figure 5: Wound at presentation

Figure 6: Wound following debridement

Figure 7: Wound at the end of evaluation period

Case Study 3

A seventy-six year old female with Type 2 diabetes and foot neuropathy presented at the podiatry clinic after surgery where 2-4th toes of her right foot were amputated. After assessment, the wound was debrided using Versajet® Hydrosurgery System. At this point, the wound could be probed to bone and therefore surgical intervention was considered to be an option. However, Kendall AMD antimicrobial foam dressing was applied to the wound, which was then closely observed for signs of further deterioration. The wound resolved in 6 weeks with further surgery for the patient being avoided. The patient expressed her delight that she did not have to be re-admitted for further surgical interventions (Figures 8 – 9).

Figure 8: Wound prior to commencing treatment

Figure 9: Wound after 6 weeks treatment with Kendall™ AMD antimicrobial foam

Case Study 4

A sixty-three year old male with Type 2 diabetes with neuropathy as a complication. On assessment, the wound was observed to be necrotic and showed signs of significant infection (Figures 10 – 11). Hydrosurgical debridement was performed revealing the extent of the wound, after which Kendall AMD antimicrobial foam dressing was applied as a bacterial barrier in conjunction with systemic antibiotics commenced. To date the wound is progressing well, with the patient reporting a reduction in exudate and odour from the wound.

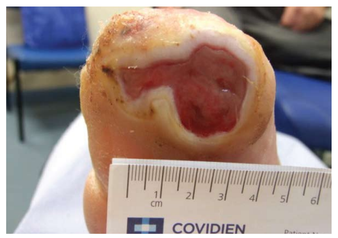

Figure 10: Wound at presentation prior to commencement of treatment

Figure 11: Wound after 3 weeks use of Kendall™ AMD antimicrobial foam, Oct. 2009

Case Study 5

A fifty-two year old, Type 2 diabetic male presented with a neuropathic ulcer under his right hallux. The management plan was to offload the affected area to prevent further pressure damage and to apply Kendall AMD antimicrobial foam dressing as the dressing of choice to the wound to provide a bacterial barrier and absorb exudate. This proved to be successful as the wound progressed to full healing in 5 weeks without infection developing, and the patient not requiring systemic antibiotic therapy. The patient verbalised his satisfaction with this care, as he had previous experience of an ulcer in the same location which took longer to heal.

Figure 12: wound at presentation following debridement, Sept. 2009

Figure 13: wound healed after 4 weeks of Kendall™ AMD antimicrobial foam, Oct. 26th 2009

Discussion

The management of foot ulcers in the diabetic patient is complex and challenging. It is vital that the Podiatry Services have access to a range of treatment options, and have the clinicians with the skills and knowledge to implement them.

The use of effective, topical antimicrobial agents is an essential treatment option, which should be considered in this group of patients who are at high risk for infection. As such, they need a bacterial barrier in contact with the wound surface. While PHMB is not a new antibacterial agent, its use in wound care is relatively new. It emerged as the antimicrobial agent within gauze dressing, and became utilised as filler of the NPWT systems where the Chariker-Jeter technique[4] is used. However, the more recent presentation of PHMB impregnated within a foam dressing (Kendall AMD antimicrobial foam dressing) is a positive development, where an absorptive dressing that may cushion the wound is required.

Conclusion

Although the evaluation was limited in that it was a undertaken as case series on a small cohort of patients, the results to date are positive. This indicates to the Podiatry Service that the Kendall AMD antimicrobial foam dressing merits further studies to demonstrate its efficacy as part of the programme of treatment for diabetic patients with foot ulcers.

References:

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