The role of neuromuscular electro-stimulation device (the geko™ device, Firstkind Ltd) as an adjunct therapy in the management of a recalcitrant leg ulcer

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Introduction

Up to 2% of people will have a leg ulcer in their lifetime with prevalence increasing with age;[1] the mean cost of treating an unhealed leg ulcer is estimated to be £13,500 per annum.[2]

Whilst venous disease causes the majority of leg ulcers in the UK, guidelines[3] suggests a combination of both venous and arterial disease may occur in 10% to 20% of individuals being referred to as mixed ulceration due to the underlying aetiology. Recent studies indicate that the venous component of mixed ulcers remains the most important factor when determining healing.[4]

This poster reports on the case of Stephen (pseudonym), a 60-year-old male with hypertension and Type 2 diabetes who developed an ulcer to the anterior aspect of his lower left leg 5 months previous, which was now non-healing. He was subsequently referred to tissue viability.

Method

On examination by the tissue viability team, the static and infected ulcer measured 2.7cm x 2.5cm with 100% dusky, fragile and unhealthy granulation tissue with the wound edges showing no advancement.

The aims of treatment were to reduce the wound bioburden plus helping to kick-start healing of this static wound. The treatment regimen included cleansing the wound with polyhexamethylene biguanide hydrochloride and betaine gel, applying a silver primary dressing, together with compression therapy in the form of short stretch bandaging.

It was recommended that Stephen should also wear a Neuromuscular Electro-Stimulation (NMES) device (The geko™ device, Firstkind Ltd) as an adjunct to the existing treatment regimen to aid healing. Stephen was quite reluctant to do this as he was continuing to work as a musician and felt that the device might interfere with his daily life. Stephen agreed to try the geko™ device for one month after explanation of its potential benefit in the healing process. The device was positioned (as per the instructions for use) to the skin overlying the common peroneal nerve at the head of fibula on his affected leg. Stephen wore the device for 12 hours a day with a 12 hour break overnight, for 7 days per week. A mark was placed on his leg to aid with the correct positioning of the geko™ device.

Results

After 4 weeks with the new treatment regimen, Stephen's wound had reduced in size with the presence of healthy granulation tissue. Stephen continued with the geko™ NMES device for a further 8 weeks resulting in full healing of the ulcer.

Discussion

Small, wireless and applied to the outer/lateral aspect of the knee, the geko™ NMES device is a novel technology to increase blood circulation in the veins to promote the healing of wounds.
It stimulates the common peroneal nerve activating calf and foot muscle pumps to increase blood circulation. It increases venous, arterial and microcirculatory blood flow equal to 60% of walking.[5]

Electro activation of the muscle pumps has been used successfully to treat hard-to-heal lower leg wounds[6] as an adjunct to standard-of-care in the management of ulceration because of its ability to increase blood circulation thus augmenting blood supply to the leg.

Conclusion

The development of adjunctive technologies provides the opportunity to promote positive patient outcomes. Lower extremity wounds can be challenging to both patients and health care professionals. This case study demonstrates that the use of a NMES device was a valuable adjunct treatment modality found to be effective in aiding healing thus allowing the patient to get on with his life ulcer free. Use of adjunctive therapies such as the geko™ NMES device should be explored in the management of recalcitrant ulcers when standard measures are not providing the expected results.

18 May 2022,
before the geko™ device

26 May 2022,
start of the geko™ device

18 August 2022, 3 months

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