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Ten years of wound care: The truth is out there!

'Indulge me'. When I was interviewed for my post as Consultant at the Royal Infirmary of Edinburgh in autumn 1994, the *X-Files* were just starting to be shown on UK television. As I write these words *Heroes* is coming to an end on BBC2 and the 25th Anniversary Edition DVD of *Blade Runner*, from which the first sentence of this article is a pivotal quote, is released. Other than a geek-boy fascination and my habit of trying to get pop culture into my articles, why is this relevant? None of the people we see with diabetic foot ulceration have the self-regenerative capacity of Claire Bennet, the quintessential cheerleader, we cannot yet replicate humans or organs to order and aliens are probably not among us. However, I believe it is relevant because 10 years ago, when *The Diabetic Foot Journal* was first published, wound care was on the brink of a golden age of scientific discovery. Genetic manipulation, one of the key threads to all of these science fiction classics, was producing treatments that were going to revolutionise care. Scientific advances which, for now at least, appear to have sadly been and gone as cost-effective and useful treatment modalities.

Diabetic foot ulceration is difficult to heal because the ordered sequences of wound repair, so easily described in acute wound healing, go wrong in chronic wounds and even more so when poor diabetes control, glycolysis, defects in cellular immunity and other protein changes intervene (Khan, 2005). The basic concepts that underpin wound management in diabetes at a macro level – debridement, pressure redistribution and infection control – will be discussed below (revascularisation is covered in Cliff Shearman's excellent accompanying article).

Growth factors and skin substitutes

The microenvironment of the chronic diabetic wound was starting to be understood in the early 1990s. The interplay between growth factors and proteases, macrophages and fibroblasts, bacterial mucins and wound inhibition was being untangled. Science was on the verge of ending chronic wounds, or so we thought.

Becaplermin (recombinant human platelet-derived growth factor-BB gel) was the first and, so far, the last commercial growth-factor for healing foot ulcers to be out of the blocks. Promising to 'heal more wounds more quickly' the trial results were not impressive enough to encourage widespread use and, when used in the toughest and most chronic wounds, they were never reproduced. Similarly, Dermagraft, Apligraf, Graftjacket and patient-derived cell-culture synthetic skin substitutes to aid healing all came and largely went, particularly in Europe where nationalised health systems could not afford them. As an early user of Dermagraft, patient selection was vital, results could be good, but ultimately the outcomes rarely justified the cost, despite any number of cost-effectiveness models.

The development of cost-effectiveness as a marketing tool is another interesting concept in the past decade. Spending money on expensive interventions rarely makes the projected actual savings in the NHS. Therefore, models concentrate more on efficiency savings, treating more people for the same money. Even this rarely happens where demand is almost infinite and resources are very finite. It is a model that other treatment modalities, including Versajet and topical negative pressure wound closure systems, have tried to copy. It seems to cloud the picture rather than clarify the use of such systems in my mind. Individual benefit, patient selection and clinical effectiveness make more sense to me as a clinician. If only more managers would see this.

Debridement

Thank you to Judith Smith and Jonathan Thow – systematically reviewing anything is a hard task. Reviewing the limited evidence on methods of debridement and being able to conclude that debridement of diabetic foot ulcers is a good thing is almost a miracle (Smith and Thow, 2001a; 2001b; 2001c). Podiatrists in diabetic foot clinics across the country should rejoice. I would urge them to embrace their skills, protect them, develop them and guard them. A knowledge of what, when and how much to debride is something which, once acquired, sets podiatrists apart as the best practitioners in diabetic foot

care. Although in some circumstances larvae are even better and the growth in the use of larvae is, to some, one of the most surprising developments in the last ten years.

Even debridement has moved on in the 21st century. Basic scalpel techniques are required by everyone with involvement in diabetic foot care but hydroscalpels such as the Versajet system are starting to be used in a number of diabetic foot centres. This system makes rapid, controllable, extensive debridement available to the skilled podiatrist, avoiding hospital stays and operating theatre time (McCardle, 2006). They are, in my view, one of the major, if expensive, advances in foot care over the past few years.

Pressure redistribution

Many hours of foot pressure measurement were performed in my formative years at Manchester Royal Infirmary working with Professor Boulton and Professor Cavanagh, who have also contributed sections to this review of the events in the lifetime of *The Diabetic Foot Journal*. They taught me a lot. It begins with a simple statement: pressure is force over area. Pressure reduction can only really occur by reducing force. Lightening patients by tying helium balloons to them or moving them to a low-gravity environment are two such examples. Everything else is redistribution. The larger the contact area, the lower the pressure on a given area. Professor Cavanagh's review gives more detail on shoes and footwear but it still seems to me that we are not much further forward in pressure redistribution techniques than we were when I first started working in this area.

Infection control

A decade ago topical antimicrobials were finished: iodine and EUSOL were banished and then came silver. Today it appears as though every new dressing is designed with silver or silver is added to every original dressing to make a silver plated version of it. Arguments over which type of silver and how much is enough, too much and not enough seem to predominate every conversation I have with a dressing representative these days. But where is the evidence we are doing good with these dressings and not harm (Burd et al, 2007)?

Are super ionic solutions for wound cleansing the new silver? At least small trials have been performed with them and they may have benefit (Kaehn, 2007). A definitive trial would be useful, however, before they are rolled out as another fashion in wound care.

I wonder when the day will come when we can definitively say which antibiotics, when and for how long are the best options for managing infection in people with diabetic foot ulceration. Until then we have consensus, guidelines and personal practice. It has been a decade in which the rise of MRSA has hit headlines and the public psyche but still more individuals arrive at my clinic with MRSA even before they are treated with antibiotics. If an ulcer is healing with MRSA in it we do not treat the MRSA specifically. If someone is admitted we tend to assume MRSA until proven otherwise. So far this empirical practice has served us well.

Dressings

The lack of evidence for silver is only surpassed by the lack of evidence for dressings in general. Unlike pharmaceuticals, new dressings do not have to prove their efficacy in trials. They are frequently promoted with case studies that promise much but deliver little. In the diabetic foot, all of the variables influencing healing so outweigh the effect that a dressing may have that a randomised control trial is unlikely to prove efficacy without hundreds of participants and thousands of pounds. I doubt such a study will ever be done. Until then, you are free to use what you are familiar with and which does no harm to the patient.

The future

There are still so many areas in which evidence is lacking and practice is based on instinct and experience. Perhaps a collaborative database of leading centres comparing practice could provide some case controlled evidence to guide the way. I have proposed this before but it was ahead of its time. Charcot in Diabetes UK has shown that this can be made to work for recording people with Charcot osteoarthropathy. If it could be done it might also be clinically useful, as well as being a fitting tribute to the friendliest small interest group in the medical world and a legacy for all our patients. ■

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