Phenytoin efficacy in treating the diabetic foot ulcer of a haemodialysis patient

Sir,

Diabetes mellitus (DM) is common among ESRD patients. A major complication of DM, the diabetic foot, is the result of progressive neurological and vascular damage, and entails increased morbidity and mortality. The advanced stages of diabetic foot problems frequently lead to lower limb amputation [1]. We present a case of a diabetic woman on dialysis, who had a foot ulcer (grade IV according to Wagner scale), and who ultimately was treated with local applications of phenytoin.

A 68-year-old female, on dialysis for 16 years, had type 2 DM and was on insulin for the last decade. In addition, she had chronic obstructive lung disease for 22 years and had been parathyroidectomized 6 years ago.

While she was on steroids and antibiotics for an exacerbation of lung disease, the patient developed an ulcer on the dorsal surface of the left foot. At that time, her DM was poorly controlled and her HbA1c was 11.5%.

Her initial treatment included surgical wound debridement and daily rinsing with soap and local applications of antibiotics (H2O2 and povidon iodine). Cultures obtained from the ulcer first revealed *Staphylococcus aureus* and later *Morganella morgani*. Based on the susceptibilities of the cultured microbes (clindamycin, teicoplanin, metronidazol, ciprofloxacin), she was treated with antibiotics, steroids were reduced gradually until stopped, and glycaemia was controlled. In 1 week and despite local and systematic treatment, the ulcer evolved to stage IV. Hyperbaric oxygen treatment failed because the patient could not tolerate the cabin’s conditions.

Two months later, in spite of intensified conventional measures, response was poor; the ulcer was still purulent, and the surgeon was considering immediate amputation of her limb. We decided, however, to try the local application of phenytoin, which in clinical trials had been found to improve healing [2]. In addition to daily ulcer care, phenytoin (1–2 ampules of a commercial preparation used for i.v. anticonvulsive treatment) was applied on the ulcer. The ulcer remained open for 60 min before being covered with a custom-fit non-adherent dry dressing. The patient was educated to repeat the same treatment on the days between dialysis sessions. Ten days later the ulcer looked cleaner, its cultures were negative and antibiotics were stopped. The healing process accelerated and was complete in 2 months. The ulcer has not recurred during 30 months of follow-up.

Studies have shown that phenytoin stimulates fibroblast proliferation, decreases collagenase activity, increases epidermal and keratinocyte growth factor receptors, accelerates initial inflammatory responses, induces new vessel formation, speeds the decrease of microbial colonies and improves healing [3–5].

It is remarkable that, although it was used successfully a decade ago in many clinical trials [2,5] that confirmed the benefits of phenytoin in wound and ulcer healing, its use for this purpose is still very limited—despite the fact that it is simple, cheap, well tolerated and most importantly, effective in the treatment of diabetic foot ulcers.

Conflict of interest statement. None declared.

DOI: 10.1093/ndt/gfg613