Chapter 13

CURRENT THERAPIES FOR DIABETIC FOOT ULCER WITH EPIDERMAL GROWTH FACTOR

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The incidence of developing diabetic foot ulcer in one year is 5% in diabetics (1). The main treatment of diabetic foot ulcers consists of wound debridement, antimicrobial therapy, and blood sugar regulation. In addition, wound care products, hyperbaric oxygen therapy and negative pressure devices are used for adjunctive treatment. Insufficient success of conservative treatment in wound healing leads to extremity amputation in many patients.

Prevention of amputation with optimal medical treatment is recommended by different clinics as the best treatment strategy (2,3).Intralesional administration of EGF was first used in Cuba in 2006 and in subsequent studies, it was shown to provide a high level of wound healing and 80% granulation tissue formation in diabetic foot ulcers (4) (Table 1).

Quite satisfactory results were found in recent studies, indicating that use of epidermal growth factor [EGF], as a new treatment method, provides quite satisfactory outcomes in terms of wound healing and prevention of amputations, providing a better quality of life. Modern therapists have been questioning the insufficient effect of medicines alone, vacuum devices and other treatments, short time to recurrence and non-decreasing rates of amputation. During the last 10 years, clinical studies confirmed that intralesional administration of EGF is very useful in diabetic foot ulcers with poor prognosis(5).Unfortunately, it is hard to find high-quality evidence-based studies of wound care. Most studies have inadequate sample sizes, short follow-up periods and poorly defined controls. Although there are not many published double-blind, randomized, controlled studies of intralesional EGF administration, it is possible to find clinical studies. The common findings of these studies are that intralesional EGF administration has favorable effects on tissue healing, decreases recurrences of chronic refractory foot ulcers and substantially prevents amputation (6).

The effect of EGF on wound healing consists of an inflammatory phase, a fibroblastic phase and a remodeling phase. EGF, as a mitogenic polypeptide, starts to exert its effect at the end of the inflammatory phase and it is known to trigger fibroblast formation followed by stimulation of granulation tissue formation and epithelialization. In addition, EGF initiates DNS synthesis and cell production and activates protein synthesis (7).

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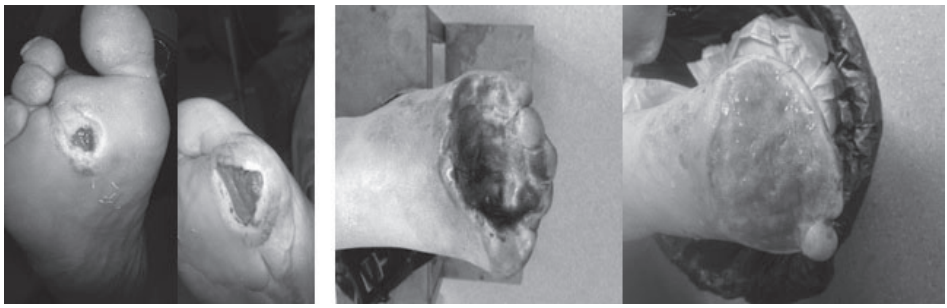

Figure 1. *Pre- and post-EGF appearances of diabetic foot wounds*

Intralesional EGF administration should not be considered as an alternative to standard debridement and antibiotherapy. On the other hand, ignoring the effect of EGF on wound healing would also be a wrong approach. In diabetic patients, intralesional EGF administration in combination with metabolic control, antibiotherapy and wound care produces quite satisfactory outcomes particularly in refractory chronic ulcer cases, based on the clinical experience and practice during the past 10 years.

Intralesional EGF administration into wound edges is easy and practical, while it is quite expensive. Considering the health costs associated with diabetes and its complications, intralesional EGF administration is considered a preferred treatment approach for diabetic foot ulcers as it prevents recurrences, reduces amputations and most importantly increases patients' quality of life.

Moreover, intralesional administration affects deeper layers compared to topical application. Pain during administration and the minimal side effects are easily tolerable.

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