The use of intralesional recombinant human epidermal growth factor (rhEGF) in advanced diabetic foot ulcers in South Africa

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Background

Treatment of complex diabetic foot ulcers (DFU) with intra- and peri-lesional injection of recombinant human epidermal growth factor (rhEGF) has been safe and effective in clinical trials. Here, we report results on the efficacy and safety of this treatment in South Africa.

Methods

A case series of 24 patients with DFU was conducted in a tertiary hospital in Tshwane, South Africa. Patients were treated between 1 March and 15 December 2019; with good wound care (GWC) and rhEGF through section 21 (compassionate care using an unregistered medicine). The rhEGF was administered intra- and peri-lesional, three times a week. The evolution of their ulcers was monitored and documented.

Results

Twenty-two of the 24 patients completed treatment, but all patients' wounds/ulcers were analysed and the outcomes reported. Satisfactory granulation was noticed in the two patients who withdrew.

Complete granulation response and wound closure were observed in the 22 patients who completed treatment, demonstrating a treatment efficacy of 91.7%.

Table I: Demographic and baseline characteristics of patients

Characteristics	*n*	%
	24	100
Sex		
Male	22	91.7
Female	2	8.3
Age (years)		
Mean ± SD	60 ± 11	
Median ± QR	57 ± 12	
(Minimum; Maximum)	(49; 94)	
Diabetes type		
Type 1	1	4.2
Type 2	23	95.8
Diabetes evolution time (years)		
Mean ± SD	12.2 ± 8	
Median ± QR	10. ± 9	
(Minimum; Maximum)	(0*; 35)	
Glucose control treatment (%)		
Metformin	15	62.5
Insulin	12	50
Sulfonylureas	1	4.2

Table II: Distribution of included patients according to characteristics of lesions

Characteristics	*n*	%
	24	100
Affected lower limb		
Right	18	75
Left	6	25
Wound location		
Toe	11	45.8
Sole	8	33.3
Dorsum	3	12.5
Transmetatarsal	2	8.3
Calcaneus	1	4.2
Internal edge	1	4.2
Extreme edge	1	4.2
Wound area (cm²)		
Mean ± SD	19.1 ± 23.2	
Median ± QR	9.6 ± 27.3	
(Minimum; Maximum)	(0.8; 101)	
Wound evolution time (day)		
Mean ± SD	112 ± 125	
Median ± QR	60 ± 83	
(Minimum; Maximum)	(7; 365)	

Table III: Characteristic of lesions according to surgical procedures

Characteristics	*n*	%
	24	100
Indication of minor surgical procedures		
Yes	22	91.7
Toilette	13	59.1
Toilette + disarticulation	5	22.7
Disarticulation	3	13.6
Transmetatarsal	1	4.5
Occlusive type patterns		
Without change	16	66.7
Femoropopliteal	6	25
Distal	2	8.3
Infection		
Yes	13	54.2
No	11	45.8
Osteomyelitis		
Yes	5	20.8
No	19	79.2
Revascularisation		
Yes	3	12.5
No	21	87.5

Table IV: Characteristic of lesions according to surgical procedures

Applications	Neuropathic	Neuroischaemic	Total
n	16	8	24
Mean ± SD	9.0 ± 8.0	12.0 ± 6.0	10.0 ± 7.0
Median ± QR	6.0 ± 15.0	12.0 ± 11.0	8 ± 14.0
(Minimum; Maximum)	(1.0; 24.0)	(3.0; 22.0)	(1.0; 24.0)

Table V: Frequency of adverse events

Adverse events	*n*	%
Total	24	100
Patients with at least one AE	6	25
Total AE	9	100
Type of AE (*n*)		
Pain at administration site (4)	5	55.5
Local infection (2)	2	22.5
Tremors (1)	2	22.5
Intensity of AE		
Light	8	88.9
Moderate	1	11.1
Severity of AE		
Not serious	7	77.8
Serious	2	22.2

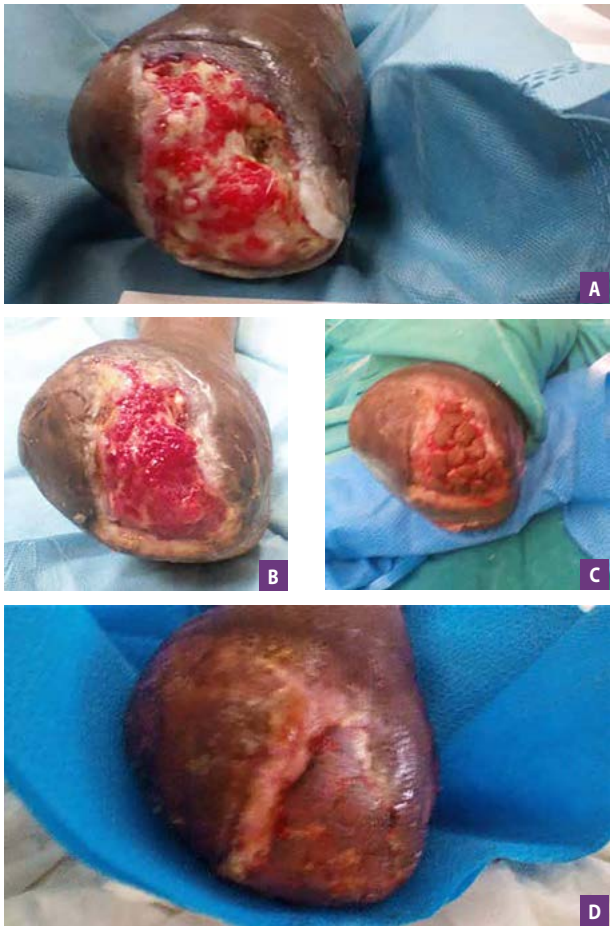

Figure 1: (A) First day of intervention with rhEGF, (B) application 16 and end of treatment, (C) type Davis skin graft, and (D) complete closure at day 45

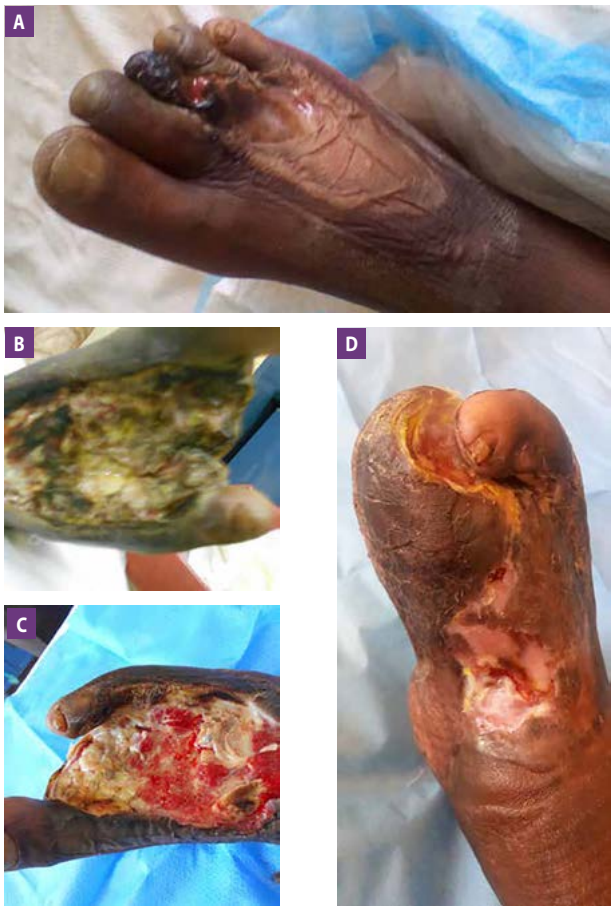

Figure 2: (A) Initial wound, (B) after surgical intervention and first day of treatment with rhEGF, (C) tissue granulation and epithelisation after 22 applications, and (D) healed wound

Most (88%) reported adverse events (AEs) were mild.

Serious AEs were observed in two patients, and none were judged to be directly related to the treatment.

Conclusion

This case series demonstrates that intervention with rhEGF in complex DFU has a 91.7% efficacy in a sample of South African patients, and was well tolerated. This treatment regimen suggests a milestone in the management of a complication of diabetes. It could be the answer to the high rates of amputations that plaque patients presenting with DFU.