



Reduction of Major Amputations in Diabetics Using Epidermal Growth Factor Analysis of 1152 Patients

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Abstract

Introduction: The advent and generalization of Recombinant Epidermal Growth Factor (REGF) treatment has sensibly modification the index of major amputations among the patients with diabetic foot ulcers (DFU) in advanced stages of them.

Objectives: To evaluate comparatively the number of major amputations between the patients who received EGF treatment and those who don't received it because any contraindication.

Patients and Method: The patients admitted by (DFU) in the III and IV of the Wagner scale were analyzed. They were 1152 within the years 2015 and 2016, to determinate the impact of its use. All patient who need minor surgical procedures, were operated on at their admission, some others were underwent minimal procedures to keep the anatomical structure of feet in order to permit a favorable rehabilitation treatment after discharge.

Results: With similar amount of admissions, in both years above 500 patients each, an absolute decrease of the amputations rate was achieved and a relative advantage with its use of 86%. The confidence index was 95%.

Keywords: GSK-3 β ; Apoptosis; Necrosis; Oxidative Stress; Osmotic Stress

Introduction

The high incidence of and their morbidity and mortality are confirmed by many international publications [1-4].

They lead to test numerous therapeutic procedures to health ulcers and safe the life [5-12].

The introduction of epidermal growth factor obtained by recombinant method of genetic engineering, has revolutionized the treatment of DFU [13-16].

Such is this way, that major amputations rates have radically diminished in our country [15,17-18].

We show our experience in manage of diabetic foot ulcer according with national standard practice.

Patients and Methods

A retrospective study was carried out including all patients admitted consecutively at the University Hospital Manuel Ascunce of Camagüey within 2015 and 2016, diagnosed of diabetic foot complications in III or IV stages according Wagner Scale.

The universe was composed by 1152 patients, all of them were analyzed trough laboratory test required to administrate the medicine.

After selection, the patients signed an informed consent to be treated.

We considered exclusion criteria those patients when major amputation was required.

All patients included received 75 µg of EGF intralesional three times a week to obtain a satisfactory result.

Surgical debridement was carried out when needed to eliminate necrosis areas and also tenotomies and osteotomies if were required to keep the optimal function of feet.

Those patients who required major amputations were evaluated clinically, hemodynamically and angiographically and some of them were revascularized.

Results

The score of admissions in both years were similar although in the second year were received more patients and performed less amputations. The amputation index decreases from 7.1 to 6.4 like appear in table 1.

Years	Patients	Amputations	Percent
2015	573	41	7.2
2016	579	37	6.4
Total	1152	78	6.8

Table 1: Major amputations index.

N=78

Source: Data base

In table 2 can be observed similar number of amputated in both years and predominated the ischemic and combined demonstrated by hemodynamical and neurophysiological studies.

Years	Neuropathic	Ischemic	Combine	Total
2015	4 (9.8%)	22 (53.7%)	15 (37.6%)	41 (100%)
2016	5 (13.5%)	18 (48.7%)	14 (37.8%)	37 (100%)

Table 2: Etiology of diabetic feet.

N=78

Source: Data base

Although the amputation rate was low. The relative vantage with the use of EGF achieved 86%, and the confidence index was 95%, like appear in table 3.

Global		Total	Confidence index	Relative advantage
Major amputation	Yes	78 (6.8%)	95%	86%
	No	1074 (93.2%)		

Table 3: Relative advantage.

N= 1152

Source: Data base

In table 4 we can observe that the amputated patients only received 10.8% and 12.2% in each year. Average 11.5% these numbers are highly significant.

Years	With treatment	Without treatment
2015	5 (12.2%)	36 (87.8%)
2016	4 (10.8%)	33 (89.2%)
Average	9 (11.5%)	69 (88.5)

Table 4: Comparison between treated and no treated.

N=78

Source: Data base

Discussion

In the large experience gained with EGF have changed the paradigm about diabetic foot prognosis in our country ten years ago. Montequin and cols, have an important experience in this issue [17,18].

The availability of the medicine in the health care assistance have reduced the average of major amputations drastically [19-21].

The reduction of major amputation through the use of EGF have surpassed the numbers of other authors revised [1,3,19,22,23].

Although in developed countries have had diminishment of major amputations index in diabetics, at the present it's still high and there are several prevention programs [22-24].

The statistical analysis of this trial confirmed the relative advantage of the treatment compared with other current therapies, because the EGF treatment is a replacement therapy in case of diabetic due to known lack of cellular stimulant to repair the wounds.

Among the patients who received the drug were amputated one for each twenty-one the first year and one of twenty-five the second.

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