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TREATMENT OF RECALCITRANT DIABETIC ULCERS USING TRICHLOROACETIC ACID: A CASE REPORT

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Abstract: 15% of the diabetic patients are estimated to be affected by diabetic ulcer. This complication is usually caused by peripheral neuropathy or vascular insufficiency. Trichloroacetic acid (TCA) solution is regarded as an appropriate treatment for many of the cutaneous lesions. In the current case report, we present the therapeutic effect of TCA in the treatment of resistant diabetic ulcer.

Key words: Recalcitrant diabetic ulcers, Trichloroacetic acid

INTRODUCTION, MATERIAL AND METHODS AND RESULTS

Our patient was an 81 years old man with 20 years history of diabetes. He developed a large necrotic ulceration lateral to his right first toe.

The ulcer size was about 8 cm x 2.5 cm and it was covered by a thick necrotic eschar (Fig. 1). Regarding the resistance of the ulcer to the traditional treatments such as off-loading, infection control and meticulous control of the blood sugar, we proposed to treat the ulcer with application of TCA solution and debridement.

We treated the ulcer with variable concentrations (30% to 75%) of the TCA for 20 consecutive weeks

(Fig. 2) and the ulcer was completely healed.

No serious complication including infection, swelling or vascular compromise observed during treatment process.

DISCUSSION

Trichloroacetic acid (TCA) solution is regarded as an caustic material that is typically used in dermatology field for its peeling effect and also its haemostatic effect.

It is regarded as an appropriate treatment for many of the cutaneous lesions. TCA can penetrate into the mid dermis and can destruct epidermal lesions up to the epidermal adnexa [1,2].



Fig.1: The clinical appearance of the ulcer before TCA application



Fig. 2: The clinical appearance of the ulcer after TCA application

Table 1: Classification of ulceration types

Stage	Grade 0	Grade 1	Grade 2	Grade 3
A	Preulcer or postulcer lesion	Superficial ulcer	Deep ulcer to tendon or capsule	Wound penetrating bone or joint
	No skin break			
B	+ Infection	+ Infection	+ Infection	+ Infection
C	+ Ischemia	+ Ischemia	+ Ischemia	+ Ischemia
D	+ Infection and ischemia	+ Infection and ischemia	+ Infection and ischemia	+ Infection and ischemia

One of the novel applications of the TCA may be its use for treatment of the resistant ulcers. It has been shown that after 2 weeks of TCA application, cellular regeneration is accelerated [2]. 5 to 7 days after TCA application, the epidermis and superficial dermis slough, carrying away cytologically atypical keratinocytes and structurally compromised dermal connective tissue. As the wound heals by second intention, it is repopulated by deep follicular epithelium and newly generated connective tissue; thus, the skin is rejuvenated both clinically and histologically [3].

The result of the current case shows the possible benefit of the TCA application for treatment of the resistant diabetic ulcer. However, further studies are recommended to better evaluate the efficacy of this method in the treatment of the resistant diabetic ulcers.

The type of ulceration was defined according to the university of texas wound classification system as shown in table 1.

The improvement of ulceration was defined according the following scoring system [4]:

4). **Necrotic tissue (Eschar):** black, brown, or tan tissue that adheres firmly to the wound bed or ulcer edges and may be either firmer or softer than surrounding skin.

3). **Slough:** yellow or white tissue that adheres to the ulcer bed in strings or thick clumps, or is mucinous.

2). **Granulation tissue:** pink or beefy red tissue with a shiny, moist, granular appearance.

1). **Epithelial tissue:** for superficial ulcers, new pink or shiny tissue (skin) that grows in from the edges or as islands on the ulcer surface.

0). **Closed/resurfaced:** the wound is completely covered with epithelium (new skin).

In the current case, the stage of ulceration was D and the grade was 3 on presentation. After treatment, the stage was improved to A and the grade was improved to 0 that the wound was completely covered with epithelium.

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