

New Trend Protocol Guide lines in Chronic Venous Ulcer

Case study

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Back ground:

One percent of middle aged and elderly population is affected by leg ulceration ,costs can rise to 10,800 dollars per pateint. The primary risk factor are older age, obesity,previous leg injury, deep venous thrombosis and philipitis.Sever complications include; cellulitis,risk of infection, loss of mobility,osteomyelitis.**Purpose:**Our study was conducted to evaluate the effectiveness of implementation of a new trend protocol guide lines treatment applied on venous ulcer.**Subject and methods:**Case report of pateint who has 37 years old with venous ulcer at lateral surface of left lower leg, more than one year ago, due to venous thrombosis led to massive ulcer wound, without effect of traditional methods. Treatment started with ultraviolet, then cold laser and followed by iontophoresis using zinc sulfate 2% for fifteen sessions. Assessment icluded measuring the size of ulcer and the morfology of the ulcer before treatment,after three, six,eigth fifteen sessions using digitalcamerawith high resolution.**Results:** there was significant improvement to venous ulcer by decreasing their size and improving their morphology.**Conclision:** new trend protocol treatment guid line applied on venous ulcer is effective and has significant improvement on venous ulcer,saving money,time and efforts.

Key word; Venous Ulcer, Iontophoresis, Cold laser, Ultraviolet

Introduction

Venous ulcer (venous insufficiency ulceration) , stasis dermatitis, varicose ulcers, or ulcus cruris) are wounds that are thought to occur due to improper functioning of venous valves, usually of the leg.

Comprehensive Classification System for Chronic Venous Disorders CEAP Classification:

In order to standardize the reporting and treatment of the diverse manifestations of chronic venous disorders, a comprehensive classification system (CEAP) has been developed to allow uniform diagnosis and comparison of patient populations. Created by an international ad hoc committee of the American Venous Forum in 1994, it has been endorsed throughout the world and is now accepted standard for classifying chronic venous disorders.(1,2,3)

The fundamentals of the CEAP classification include a description of the clinical class (C) based upon objective signs, the etiology (E), the anatomical (A) distribution of reflux and obstruction in the superficial, deep and perforating veins, and the underlying pathophysiology (P), whether due to reflux or obstruction.(1,2,3)

Seven clinical categories are recognized as shown on the table below:

| CEAP classification of chronic venous disease | Clinical classification |
|---|--|
| C0 | No visible or palpable signs of venous disease |
| C1 | Telangiectasies or reticular veins |
| C2 | Varicose veins |
| C3 | Edema |
| C4a | Pigmentation or eczema |
| C4b | Lipodermatosclerosis or atrophie blanche |
| C5 | Healed venous ulcer |
| C6 | Active venous ulcer |

S = Symptomatic, including ache, pain, tightness, skin irritation, heaviness, and muscle cramps, and other complaints attributable to venous dysfunction.

A = Asymptomatic

| Etiological classification | Anatomical classification | Pathophysiology |
|---------------------------------------|--|---|
| Ec: Congenital | As: Superficial veins | Pr: Reflux |
| Ep: Primary | Ap: Perforating veins | Po: Obstruction |
| Es: Secondary | Ad: Deep veins | Pr,o: Reflux and obstruction |
| En: No venous cause identified | An: No venous location identified | Pn: No venous pathophysiology identifiable |

Designed to be a document that would evolve over time CEAP underwent its first official review and revision by an international panel under the auspices of the American Venous Forum in 2004. The revised document retains the basic CEAP categories, but improves the underlying details. Further more, to encourage wider usage among clinicians, an abbreviated version or "basic CEAP" was adopted as an alternative to the comprehensive CEAP.

Venous ulcer characterized by:

- Venous ulcer most often accompanies varicose veins
- Affect distal leg and ankle
- Are usually painful and heavily exudative

-Are often recurrent

-Can become huge

-Exhibit varying depths, even within the same ulcer

Iontophoresis:

Iontophoresis is defined as the application and the use of Direct Current to facilitate delivery of ions into the skin for therapeutic purposes. **Iontophoresis** is a modality for drug delivery in certain conditions. This type of therapy can be administered by a **physical therapist** and is a fast way of achieving rapid resolution of inflammation.

(4)

Advantage of iontophoresis over drug production:

- avoids “first-pass” elimination by liver.
- less drug into systemic circulation; decreased side effects.
- potentially greater concentration of drug in the target area
- supervised; maximizes compliance.
 - non-invasive; less risk of infection
 - less pain & anxiety
 - less drug into systemic circulation; decreased side effects

Less risk of local collagen catabolism

Ultraviolet radiation:

Ultraviolet radiation (UVR) has been used for many years in the treatment of both skin diseases and wounds. Much work has been carried out to evaluate its effects in disease. This review considers the physiological effects, hazards and efficacy of UVR for a variety of skin conditions.

Ultra violet radiation has great effect on wound and ulcer healing, it has not yet been widely applied to wound care, restoration of skin homeostasis (5)

Null Hypothesis(H0): there is no significant differences in using new trend guide line in management of venous ulcer.

Hypothesis (H1): there is significant differences in using new trend guide line in management of venous ulcer.

Subjects, Instrumentations and Methods

Subjects:

This study was conducted in the department of physical therapy in New Cairo Police Hospital from 1/12/2017 to 15/1/2018, fifteen sessions, Three sessions per week.

Patient history:

Location of the wound: it was located at lateral surface of left lower leg,

Patient aged 37 years old, with no history of diabetes nor hypertension. there was history of left lower limb venous thrombosis which was treated and the patient now under anti-coagulant. The case start as venous

ulcers at left lateral surface of lower leg one year ago, patient undergone different traditional treatment methods of medications through twelve months, which costed him more than 12000 pounds with no improvement signs.

Patient was subjected to four layer compression therapy for 2 weeks before proceeding to Iontophoresis.

CEAP Classification: It was classified according to CEAP classification into C₆, E_S, A_P and P_r.

Materials:

1-Electrical multi stimulator (chattanooga) made in USA



chattanooga

2-Ultraviolet



Ultraviolet is used for many years in the treatment of both skin diseases and wounds

3-cold Laser (scanner mode) He-NE scanner Laser



4-zinc sulfate 2%

5-Alcohol

Patient Assessment: (linear measurement method)

prior to assessing the ulcer, it was debrided so that the actual size can be determined.

The most common type of measurement is linear measurement (clock method) (6)

Application:

- 1- using centimeter ruler to measure the greatest length (head to toe) direction; and the greatest width (side to side). Multiply these two measurements (length *width) to calculate the size of ulcer



2-Digital camera was also used to capture photos to follow the improvement of the ulcer

Methods:

New trend protocol guide lines:

Patient preparation:

Patient was supine line on the right side in relaxed position with left lower leg exposed to the therapist.

1- Clean the area with piece of cotton immersed in alcohol.

2-Apply ultraviolet for one minute, perpendicular to the ulcer at distance 10 centimeter from the ulcer, for one minutes according to erythema test conducted to the patient. (7)

3-Apply cold laser for twenty minutes in form of scanner mode/ He-NE scanner Laser/wave length = 905 NM, maximum power 25 watt .



4-Apply iontophoresis using zinc sulfate 2% for ten minutes.



Application of iontophoresis using combination technique (electrical stimulation with ultrasound)

RESULTS

- **CEAP Classification:** Patient classified according to CEAP classification after completing treatment sessions into C₃, E_S, A_P and P_r.

-There was significant improvement in venous ulcer as the size of ulcer decrease from 200 to 8 (cm²)

-There was significant improvement in morphology of the ulcer as the following:

Before treatment:



After three sessions:



After six sessions:



after eight sessions:



After fifteen sessions:



DISCUSSION

study was conducted to evaluate the effect of continuous electrical stimulation and zinc sulfate administered by transdermal iontophoresis on skin healing in diabetic rats, results showed that electrical stimulation in combination with the administration of zinc sulfate in form of iontophoresis is able to improve the morphological and ultra-structural changes seen in healing in diabetic animal's process. (8)

Explanation of laser improvement:

The histopathological examination observed that the good response of this group may be related to stimulation of inflammatory cell or activation of the chemotactic factor by irradiation with this dose. This observation agreed with a previous study, in which by using LLLT, the high phagocytic activity of macrophages was observed as early as 6 hours. LLLT can facilitate wound healing, which may be due to acute inflammation is resolved more rapidly and the proliferation phase of healing begins earlier, therefore, the LLLT

decreased the inflammatory reaction of wound healing. (9,10)

Low level laser therapy has been promoted for its beneficial effects on tissue healing and pain relief. Study was conducted to evaluate the effect of laser on wound healing, results showed that low doses of laser were found to stimulate the regeneration not only of mechanically induced wounds but also of burns. The wound healing involves an increase rate of epithelial growth. (11)

Explanation how ultraviolet improve ulcer:

ultraviolet is already widely applied for sterilization of inanimate objects. Ultraviolet has been directly applied to the wounded tissue to stimulate wound healing, and has been widely used as extracorporeal UV irradiation of blood to stimulate the immune system. Ultraviolet has distinct effects on cell signaling, but has not yet been widely applied to wound. (12)

Conclusion:

New tend protocol guide line of treatment is very effective in

management of venous ulcer, with significant differences.

Recommendation:

1- It is recommended to use the new guide line protocol in treatment of other forms of ulcers, arterial, autoimmune and mixed types of ulcers.

2- Investigate the effect of new trend guideline on large sample to be able to generalize the effect.

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I am freely voluntarily consenting to participate in this research study under the supervision of researcher: **Nesreen Ahmed Abdelgelil A** description of the study procedure has been explained to me and understands that I may withdraw my consent and discontinue participation in this research study at any time without prejudice to me

Participant:Ahmed said Abdelhady

Date: 1/12/2017

إقرار

أوافق أنا احمد سعيد .. عبد الهادي علي المشاركة في
الدراسة البحثية الخاصة بالباحثة/نسرين احمد عبد الجليل وقد تم شرح خطوات البحث
لي بالتفصيل وأنه من حقي أن انسحب من الدراسه في أي وقت و دون أي أضرار لي.
و هذا إقرار منى بذلك.

التاريخ

التوقيع

2017 / 12 / 1

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المستخلص العربي

مقدمة: ويتأثر واحد في المائة من السكان في منتصف العمر وكبار السن بتقرح الساق، ويمكن أن ترفع التكاليف إلى 800.10 من الدولار لكل مريض.

عامل الخطر الرئيسي هو السن الأكبر، والسمنة، وإصابة في الساق السابقة، والتخثر الوريدي العميق، التهاب الفيبريوس. وتشمل المضاعفات الشديدة؛ التهاب النسيج الخلوي، وخطر الإصابة، وفقدان الحركة، التهاب العظم.

الغرض: أجرى بتدر استئنا التقييم فعالية تنفيذ خطوط دليلبر وتوكولاتها الجديد العلاجات المطبق على قرحة الوريدي.

الاساليب والطرق: تقرير حالة الذليديه

37 سنة معقر حة وريدي في السطح الجانبي من الساق اليسرى السفلى، منذ أكثر من عام واحد، بسبب تخثر وريدي بدأ بالجر حة ضخمة، د و نتائج الطرقات التقليدية. بدأ العلاج بالأشعة فوق البنفسجية، ثم الليزر البار دوتبعها لا يونوفوريز باستخدام كبريتات الزنك 2٪ لمدة خمسة عشر جلسة.

النتائج: تقييم مقياس حة شدة قرحة شكل قرحة قبل العلاج، وبعد ثلاثة سنة، إيغت خمسة عشر جلسات باستخدام كاميرا رقمية.

الملخص: كان هناك تحسن كبير في القرحة الوريدي من خلال خفض حجمها وتحسين الشكل

اتجاه جديد وتوكولات العلاجات الوريدي فعالة ولها تحسن كبير على القرحة الوريدي، وتوفير المال والوقت والجهود