

REVITALIZING WOUND CARE: THE EFFICACY OF LEECH THERAPY IN
TREATING NON-HEALING ULCERS: A CASE REPORTSaif Ali Siddiqui^{1*}, Sayyed Adnan Mohammad², Mohammad Shoaib³ and Asia Sultana⁴¹Assistant Professor, D/O Ilaj-Bit-Tadbeer, Markaz Unani Medical College, Kozhikode-673586, Kerala, India.²Associate Professor, D/O Ilaj-Bit-Tadbeer, Markaz Unani Medical College, Kozhikode-673586, Kerala, India.³Assistant Professor, Department of Ilaj-Bit-Tadbeer, A.M.U, Aligarh-202001, U.P, India.⁴Professor, & HOD, Department of Ilaj-Bit-Tadbeer, A.M.U, Aligarh-202001, U.P, India.

*Corresponding Author: Saif Ali Siddiqui

Assistant Professor, D/O Ilaj-Bit-Tadbeer, Markaz Unani Medical College, Kozhikode-673586, Kerala, India.

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ABSTRACT

Background: Non-healing ulcers are becoming a major public health problem. These are the ulcers that do not heal by conservative treatment within six weeks. The high prevalence of leg ulcers directly affects a patient's quality of life because it produces psychological (anxiety, depression), and social and physical (amputation) constrain. The treatment of non-healing ulcers involves treatment of the cause, wound cleaning, and dressing properly, maintenance of personal hygiene, management of the infection, and wound closure. Because of its common prevalence and non-availability of affordable treatment, it is worthwhile to look towards the Unani system of medicine where non-healing ulcers can be efficiently treated. **Objective:** The present article reports the wound-healing properties and efficacies of Leech Therapy in non-healing ulcers. This study provides an efficient and inexpensive alternative management of non-healing leg ulcers and markedly reduces the chances of Surgery. This also shows how the Unani system of medicine is efficient in dealing with non-healing ulcers. **Intervention:** A 50-year-old female has a complaint of chronic ulcer in her left foot near the medial malleolus with swelling, pain, discharge, and darkening of the skin. Four to five leeches were applied once every week for 2 months. The efficacy of leech therapy was assessed every 15th day based on the selected criteria for assessment of ulcer. **Result:** In this case report, the ulcer was completely healed, and also showed remarkable improvement in other variables. **Conclusion:** Leech Therapy has been proven beneficial in treating non-healing ulcers and enhancing patient's quality of life.

KEYWORDS: Non-healing ulcer, Pain, Leech therapy, *Unani* medicine, Hirudotherapy.

INTRODUCTION

Non healing ulcer is a chronic wound that shows no tendency to heal after 3 months of appropriate treatment or is still not fully healed at 12 months.^[1] Chronic ulceration of the lower legs is a relatively common condition amongst adults, and ulcer symptoms usually include increasing pain, friable granulation tissue, foul odor, and wound breakdown instead of healing.^[2,3] It has been reported that ulcers related to venous insufficiency constitute 70%, arterial disease 10%, and ulcers of mixed etiology 15% of leg ulcer presentations.^[4] Arterial leg ulcers occur as a result of reduced arterial blood flow and subsequent tissue perfusion.^[5] A reduction in blood supply causes death of tissue in the area being fed by the affected artery. Ulcer development is often rapid with deep destruction of tissue. Arterial ulceration typically occurs over the toes, heels, and bony prominences of the foot.

The ulcer appears "punched out" with well-demarcated edges and a pale, non-granulating, and necrotic base.^[6] The treatment of chronic ulcers of the lower extremities presents a therapeutic challenge. In modern medicine for chronic ulcer include surgery, sclerotherapy, compressive therapy (conventional therapy), and adjuvant pharmacotherapy^[7] Other treatment for ulcer are as neurovascular interventions such as lumbar sympathectomy or spinal cord stimulation; systemic therapy with hyperbaric oxygen or intravenous therapy with agents such as prostaglandins; local mechanical therapy such as negative pressure wound therapy (NPWT), electromagnetic stimulation or enhanced local oxygen therapy; and finally, topical therapy with vasoactive growth factors or tissue-engineered skin products. The various treatment options for chronic non heal ulcers in modern medicine are very costly and time taken. Notable, *Unani* physician like *Ibne Sina*, *Zakaria Razi*, *Abul Qasim Zaharawi*, and many other used leeches as a natural tool for blood- letting in

different diseases. Leech therapy has tremendous effect in skin disease especially in chronic ulcer.^[8,9,10] Chronic ulcers are referred to as *Quroohe Khabeesa* in the *Unani* medical system. Every organ in the body has a unique *mizaj*, according to *Unani* philosopher *Rabban Tabri*, and each organ serves a distinct purpose only to the extent that the *mizaj* is within a normal range. The *Unani* medical system also operates on the general tenet that *hararat* and *ratubat*, when they rise over normal limits, cause *ufoonat* (putrefaction), or create an atmosphere that is conducive to *ufoonat*. In order to restore the *mizaj*, all necessary steps should be followed.^[11]

Present Case Study is an attempt to highlight the role of *Irsal-e-Alaq* (Hirudotherapy/Leech Therapy) in alleviating the non-healing ulcer.

MATERIAL AND METHODS

Selection of case- A diagnosed patient with non-healing ulcer was taken for the study from Regimental therapy OPD of Markaz Unani Medical College & Hospital, Kozhikode, Kerala.

CASE PRESENTATION

This patient was a 50-years old female who attended our OPD of the Markaz Unani Medical College & Hospital on 01/12/2023 with complaints of chronic ulcer at the left foot near medial malleolus, pain, swelling in the left foot, darkening of skin, difficulty in walking and daily life activities. She has been managing the condition with antiseptic dressings and oral antibiotics for one year. She took treatment at multiple care centers but had no relief. The patient had no comorbidities and there was no history of smoking/alcohol/drug/ tobacco chewing. The systemic examination of the patient was done, and all the vital parameters were found within normal limits. Sensory functions (pain, touch, pressure, and temperature) were normal. The patient was hemodynamically stable. In local examination, localized ulcer deeper to subcutaneous tissue exposing soft tissue at left foot with profuse discharge, localized tenderness, Tolerable unpleasant smell, Rough irregular edges, and Unhealthy, less granulation tissue. No lymph node was found palpable. X-ray of the foot shows no bony involvement.

Informed consent

The Patient was willing for this study, and informed consent was taken before the start of intervention.

Intervention procedure

Leeches were applied weekly for two months. Fresh unused, well-cleaned leeches are gathered 24 hours before starting a leech therapy session. Leeches were sent for identification to the Zoology department and have been identified the leeches as *Hirudinaria granulosa*. Small and ventilated containers partly filled with water for leeches were used. These containers were labeled with the patient's name. Before starting a leech therapy session, Waterproof padding

and towels, Bandages or highly absorbent material, Adhesive tape, Water, Scissors, a disposable razor, and Surgical-gloves, were required and gathered. Patient was advised not to use perfume or chemicals on the skin at the intended application site for at least 2 days before treatment. The skin of the target area was thoroughly cleaned with soap and water or removes all substances with strong odor or taste because leeches are very sensitive to a strong odor. After wearing surgical gloves, active and healthy leeches were selected and the head of the leech was put at the targeted area, attachment generally occurs quickly. If the leech was reluctant to bite, a small needle prick was made on the skin to produce a tiny droplet of blood, which results in enthusiastic attachment. The target area was kept warm and dark by covering it with a towel or other material. Leeches usually stay attached for 30-60 minutes and fall itself. When the leeches dropped off they were placed in a jar labeled with the patient's name to avoid confusion between used and unused animals and to prevent use on another patient. The tripartite jaw of the leech makes a three-pronged Y-shaped bite wound. After the leech has dropped off it usually takes 3-48 hours for the wound to stop bleeding. The slow drainage of blood is an important part of treatment. The drainage of blood reduces venous congestion. When there was a good outflow of blood after leech feeding, the wound was loosely covered and the extent of bleeding 15-30 minutes later, if satisfactory, a loose dressing was applied. The patient was advised to avoid strenuous physical activity until the bleeding stop naturally. Primary dressings consist of a wide and thick sterile pad to absorb all the blood oozing from the wound. The layers of padding were loosely secured with a gauze bandage that was not so tight that it obstructed the blood flow.

Efficacy and Safety Assessment

For efficacy assessment, the Baseline observations were recorded on zero-day thereafter at an interval of 15 days to 2 months. At every visit, the patient was asked about the improvement and worsening in their symptoms and subjected to examination to assess clinical findings. Concomitant treatment was not allowed during the protocol period. The Criteria for the assessment of ulcer included the following parameters: Size of ulcer (Wagner's grading of ulcer): grading as, '0' (healed ulcer or pre-ulcerative lesion, 1 (Superficial ulcer), 2 (Ulcer deeper to subcutaneous tissue exposing soft tissue or ulcer bone), 3 (Abscess Formation Underneath, osteomyelitis), 4 (Gangrene of part of tissues, limb or foot). Discharge of ulcer: grading as, '0' (No discharge/no dressing), 1 (Scanty, occasionally discharge/ little wet dressing), 2 (Often discharge needs daily dressing), 3 (Profuse, continuous discharge need daily dressing). Pain & Leg discomfort: grading as, '0' (No pain), 1 (Localized pain during movement but relieve on rest), 2 (Localized pain even during rest), 3 (Localized pain even during rest and also toward other side). Smell of ulcer: '0' (No Smell), 1 (Bad Smell), 2 (Tolerable or unpleasant smell), 3 (Foul and intolerable smell). Edges of ulcer: '0' (adhere edges), 1 (Smooth, even, regular edges), 2 (Rough, irregular Edges), 3 (Angry look).

Floor of ulcer: '0' (Smooth regular with granulation tissue/no need dressing), 1 (Rough, regular, mild discharge, less granulation tissue/need dressing), 2 (Unhealthy, less granulation tissue/needs daily dressing), 3 (Unhealthy, no granulation tissue). Color flow Doppler ultrasound was carried out to exclude arterial disease and to determine the patency of the vein and a bidirectional flow probe was used to detect venous reflux. This investigation was carried out with the patient standing. The assessment of the safety of the treatment was done by hematological assessment (before and after the treatment) TLC, DLC,

ESR, CT, BT, and Biochemical assessment (before and after the treatment) – Blood sugar fasting and Postprandial, HBsAg, Elisa test for HIV and AIDS were carried out for not to perform leech therapy. Hb% assessment was done on every 15th day to check anemia. Color flow Doppler was done before and after treatment [Table 1].

RESULT

A markedly significant improvement was seen in the patient's symptoms and signs with leech therapy, as shown in Figs. 1-5 and Table 1.

Table 1: Effects of Leech Therapy on Efficacy & Safety Parameters.

PARAMETERS	0 Day	15th Day	30th Day	45th Day	60th Day
Size of ulcer	3	3	2	1	0
Discharge	3	3	2	1	0
Pain & Leg discomfort	3	3	3	2	1
Smell	2	2	2	1	0
Edges	2	2	1	1	0
Floor	2	2	1	1	0
Color flow Doppler					
SFJ	Incompetent				Incompetent
SPJ	Competent				Competent
Hemoglobin	12.8	13.1	13.2	13.3	13.4

DISCUSSION

A 50-year-old woman was observed for 60 days after developing a Non-healing ulcer in her left foot, as described in this case report. Leech treatment was applied locally to the patient. Antiseptic bandages, various medications such as oral antibiotics, local antibiotics, and surgery might somewhat, but not totally, alleviate symptoms in the conventional medical system. Therefore, the development of a treatment that may completely cure non-healing ulcers and lessen their associated symptoms without causing any side effects is urgently needed. Leeches can be extremely helpful in certain situations, especially given the advancements in medical technology. Considering the above mentioned aspects, *Irsal-e-Alaq* (Leech Therapy) was selected to evacuate morbid humor from the blood vessels by its sucking property and hence found effective in this case. The reason why leech therapy has worked is that the presence of several pharmacologically active substances and enzymes in the leech's saliva, i.e., hirudin,

hyaluronidase, Eglin, calin, bdellins, etc. Hirudin and calin are anticoagulants, as the main cause non-healing ulcer is venous insufficiency which causes stasis and these enzymes from leech's saliva help decrease stasis and slowly cleansing the wound by maintaining secondary bleeding for approximately another 12 hours. Histamine-like substances have a dilatation effect on the blood vessels and thereby causing an increase in the bloodstream to the bite site and helping in wound healing due to circulation. The hyaluronidase increases the membrane permeability, reduces the viscosity, promotes the diffusion of injected fluids, and acts as an antibiotic. Bdeletin and Eglin enzymes acts as anti-inflammatory, antioxidant, and protease inhibitors and inhibit trypsin, plasmin, and acrocin to reduce swelling due to venous congestion. Eglin is well tolerated on the central nervous system and prevents neutrophil infiltration (adhesion, penetration, and migration) into inflamed vessels and neutrophil-mediated injury to the microvascular endothelium, thus helping in granulation.



Figure: 1 (Before Treatment).



Figure: 2 & 3 (During Treatment).



Figure: 4 & 5 (After Treatment).

Apyrase is a nonspecific inhibitor of platelet aggregation by its action on adenosine 5' diphosphate, arachidonic acid, platelet-activating factor (PAF), and epinephrine. Destabilase: Dissolves fibrin and has thrombolytic effects, which help in healing. Acetylcholine is a vasodilator that decreases stasis and increases blood circulation towards ulcer which promotes healing.^[12,13]

As per the *Unani* concept, impure blood is extracted from the body, thus releasing the body from toxins, and the circulation of fresh blood takes place at the site of the lesion, which makes the healing process easier. The patient was asked to follow up in OPD. However, no reoccurrence of any signs and symptoms was seen. *Irsal-e-Alaq* (Leech Therapy) proved very effective in this patient of non-healing ulcer. However, further evaluation with a large sample size is required to show its significance for non-healing ulcers.

CONCLUSION

A variety of illnesses have been treated with *Irsal-e-Alaq* (Leech Therapy), a well-liked therapeutic approach over the years. Regarding non-healing ulcer, it is an extremely effective and reasonably priced therapeutic approach. It takes off dead tissue slough and promotes the development of epithelialization and healthy granulation tissue. Based on the case's outcomes, it seems that *Irsal-*

e-Alaq can be used to treat non-healing ulcer cases of this kind and enhance the quality of life for those patients while also having a relatively long-term clinical efficacy and no side effects. However, further research on this therapy is critical and needs funding. Scientific use of this therapy is urgently needed.

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