Available online on 15.09.2021 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

Open Access Full Text Article

Case Study

Management of Non-Healing Ulcer by the Use of Crushed Raw Papaya along with Leeching: A Case Study

Minhaj Ahmad[1]*, Abdul Nasir[2]

[1] *Associate Professor, Department of Jarahiyat (Surgery), School of Unani Medical Education & Research, Jamia Hamdard, New Delhi, India*

[2] *Assistant Professor, Department of Ain Uzn Anf wa Halaq (Eye & ENT), School of Unani Medical Education & Research, Jamia Hamdard, New Delhi, India*

Article Info:

Article History:

Received 07 July 2021
Reviewed 10 August 2021
Accepted 17 August 2021
Published 15 Sep 2021

Cite this article as:

Ahmad M, Nasir A, Management of Non-Healing Ulcer by the Use of Crushed Raw Papaya along with Leeching: A Case Study, Journal of Drug Delivery and Therapeutics. 2021; 11(5):1-4
DOI: http://dx.doi.org/10.22270/jddt.v11i5.4978

*Address for Correspondence:

Dr. Minhaj Ahmad, Associate Professor, Department of Jarahiyat (Surgery), School of Unani Medical Education & Research, Jamia Hamdard, New Delhi, India.

Abstract

The incidence of non-healing ulcer is 1-2 percent in developed countries. In Indian community its prevalence reported in year 2004 was 4.8 per 1000 populations. It may increase many folds in future because of increase in number of old persons, diabetes mellitus and vascular diseases

A male patient aged 63yrs. came to surgery OPD Majeedia Unani Hospital, Jamia Hamdard, New Delhi, in October 2019, with the complain of ulcer on antero-medial aspect of right foot. The ulcer was painful and movement was limited on affected side.

After required investigations and local examination of wound, treatment was started by local application of meshed papaya and combination of oral Unani drugs formulations along with leech therapy as described in texts of Unani System of Medicine. It was observed that Unani treatment of non-healing ulcer with papaya and leech therapy is an option to avoid amputation and its complications. The ulcer completely healed without any locomotor disturbances. Recovery was very fast and the condition of leg totally resolved without any complications and side effects.

Keywords: Non-healing ulcer, Unani medicine, leech therapy, Qurooh-e-Aseeratul Indemal.

INTRODUCTION

The incidence of non-healing ulcer is 1-2 percent in developed countries. In Indian community its prevalence reported in year 2004 was 4.8 per 1000 populations. It may increase many folds in future because of increase in number of old persons, diabetes mellitus and vascular diseases.[1]

Chronic non-healing ulcer are ulcer that have failed to progress through a timely sequence of repair, or one that proceeds through the wound healing process without restoring anatomic and functional results. Typically, there is a physiological impairment that slows or prevents healing of an ulcer.[2]

Although there is no clear consensus in the duration of an ulcer which do not heal within 6 weeks to 3 months. The Wound Healing Society classifies chronic non-healing ulcer into four major categories: pressure ulcers, diabetic foot ulcers, venous ulcers, and arterial insufficiency ulcers. When ulcer healing is impaired, there is usually not a single factor, but rather multiple contributing factors on work. This is due to the fact that there are overlapping mechanisms in normal ulcer healing that prevent a single factor from disrupting the process. However, when the ulcer healing process is disrupted and ulcer healing is impaired, chronic non-healing ulcers will develop. In general, non-healing ulcers share similar characteristics: high level of proteases, elevated inflammatory markers, low growth factor activity, and reduced cellular proliferation. There are several factors that affect ulcer healing and contribute to the pathogenesis of chronic ulcers. Some of the common factors are infection, ischemia, metabolic conditions, immunosuppression, and radiation.[2,3,4] It is advocated that removal of crust and dead necrosed tissue from the floor enhance the process of granulation and healing. Keeping the mechanism in mind the initiatives were taken for the treatment of non-healing ulcer. Oral & local medication and debridement by any method (manual or enzymatic) is basic principle of treatment. Enzymatic debridement involves application of commercially available enzymatic agents such as collagenase or papain to the wound. Collagenase is an enzyme isolated from the bacterium *Clostridium histolyticum*. It possesses the ability to selectively digest collagen in necrotic tissue but not in healthy tissue. Papain is a proteolytic enzyme that is found naturally in the papaya fruit. Its proteolytic function must be activated by urea which is also included in the commercially available papain formulation. Another papain ointment formulation contains papain, urea and chlorophyllin. Similar to collagenase, papain selectively digests proteins in nonviable tissue and spares the healthy granulation tissue. It is the general consensus that enzymatic debridement and autolytic debridement are slow and are only effective in

wounds with minimal necrosis. They can be used as an adjunct to surgical debridement.[5,6]

Leeches are very effective in the treatment of non-healing ulcer and recommended by ancient physicians for the treatment.

Medicinal leech therapy or Hirudotherapy is a kind of complementary and integrative treatment method applied with blood-sucking leeches. One or more leeches are attached to the skin of problematic area and the purpose is to gain potential utilities of leech saliva that is secreted while the leeches are feeding. Medicinal leeches have been used for centuries and the term leech was provided from the word "laece" (physician). The first recorded applications were observed in ancient Egypt.[7]

CASE STUDY

A male patient aged 63yrs. came to surgery OPD Majeedia Unani Hospital, Jamia Hamdard, New Delhi, with the complain of itching with vesical formation on anterior aspect of upper part of medial malleolus right foot since11months back. Formation of wound on the vesical area after 3days itching followed by discharge of watery fluid from wound.

According to the patient, he was quite well before 11 months. After that he noticed itching and blister formation on right foot anteriorly above the medial malleolus. Initially he ignored the problem and not consulted to any doctor for the same. Gradually ulcer increased in size and converted into a large ulcer with pain and difficulty in walking. Pus was watery with foul smell. The pain was mild, continuous, non-radiating, localized and throbbing in nature. Pain aggravate while walking. Patient took medicines from private practitioners but not relieved. Initially the ulcer was small in size but gradually increased longitudinally. The size of ulcer was 8.5cm x 6.2 cm x 0.4 cm. The edge of the ulcer was glossy, edematous, inflamed, indurated in surrounding area. By occupation the patient was retired from private job as a manager in lower middle-class restaurant.

On general examination; general condition was good, no pallor, icterus, cyanosis, or clubbing were noted. Vitals within normal limit, no abnormality were detected in other systems such as respiratory and cardiovascular, gastrointestinal, urinary and nervous systems.

INVESTIGATION

1. CBC: Hb-12 gm%, ESR- 22mm/hr.
2. Blood Sugar -Fasting-101mg/dl, Post-prandial-131mg/dl,
3. LFT- S. Bilirubin Total- 0.6mg/dl, S. Bilirubin Direct-0.2mg/dl, S. Bilirubin Indirect-0.4mg/dl, SGOT- 33 IU/L, SGPT- 30 IU/L, S. Alkaline Phosphatase-162 IU/L
4. KFT- Blood Urea- 23mg/dl, S. Creatinine- 0.8 mg/dl, S. Uric Acid- 5.6mg/dl, S. Protein Total- 6.9mg/dl, Albumin-3.8g/dl, Globulin- 3.1g/dl
5. Biopsy (tissue from the edge of ulcer). No Significant histological changes seen in the section study
6. Pus Culture- only a few commensals (diphtheroid) growth-Pus Sensitivity-Mainly fibrinous material, -A few pus cells, A few diphtheroid seen
7. HbsAg- Non-Reactive
8. HIV- Non-Reactive
9. Bleeding Time-2min 13sec
10. Clotting Time-7min 50sec
11. X-Ray right foot-AP & Lateral view (no abnormality seen).

TREATMENT METHOD (Unani Medicines)

Oral Medication

- Majoon Ushba 10gm once in the Morning
- Qurs Musaffi 2 twice a day
- Arq Shahtra 125ml. twice a day
- Qurs-Asfer 2 twice a day

Local treatment

- Cleaning of the wound by neem water/normal saline.[8]
- Application of honey on the floor of ulcer
- Unripe meshed papaya dressing was placed over the wound.
- Application of leeches (2-3 leeches) twice a week.
- papaya and honey along with the debridement of the tissue was done in operation theatre Majeedia Unani Hospital.[9,10,11,12]
- Patient educated about ulcer care and prevention.

During the first week the dressing was changed daily due to the copious amount of drainage from the wound.

Table 1: Gradation criteria for assessment of ulcer

Parameters for Assessment	Gradation Criteria			
	0	+	++	+++
Size	No discontinuity of skin/mucus membrane	¼ of previous area of the ulcer	½ of previous area of the ulcer	›½ of previous area of the ulcer
Pain	No pain	Localized pain during movement but relieved on rest	Localized pain even during rest	Localized pain even during rest and also towards other side
Discharge	No discharge/dry dressing	Scanty, occasional discharge/ Little wet dressing	Often discharge needs daily dressing	Profuse, continuous discharge needs frequent dressing
Smell	No smell	Bad smell	Tolerable, unpleasant smell	Foul and intolerable smell
Edge	Adhere edge	Smooth, even and regular edge	Rough, irregular edge	Angry look
Floor	Smooth, regular with granulation tissue/ No need for dressing	Rough, regular, mild discharge, less granulation tissue/ needs dressing	Unhealthy, less granulation tissue/ needs daily dressing	Unhealthy, no granulation tissue

Table 2: Observation of prognosis of ulcer as per assessment criteria

Sign and Symptoms	Before Treatment	After treatment			
	Day1	1 weeks	2 weeks	3 weeks	4 weeks
Size	+++	+++	++	++	-
Pain	++	++	-	-	-
Edge	++	++	+	+	-
Floor	++	++	+	+	-
Discharge	++	++	+	-	-
Smell	++	+	-	-	-

RESULT

The overall treatment process as it relates to wound size is summarized (Fig. 2). Within one week the drainage had decreased significantly, the wound appeared unhealthy, raw and red, and the wound edges were dry and callous. Pain remained mild.

The wound measured 8.5cm x 6.2 cm x 0.4 cm. Pain was at a tolerable level (4-5 on pain scale) with only occasional analgesia.

By the end of 2nd week, the ulcer decreased in size measuring 6.5 cm. x 4.0 cm. x 0.3cm. with dead tissue present on the floor ulcer. The surrounding area was edematous, dark pigmented and firm to palpate.

Figure 1: After 2 days of admission

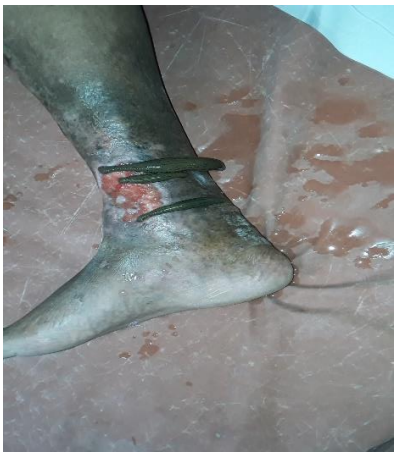

Figure 2: Leech application on wound 2nd week

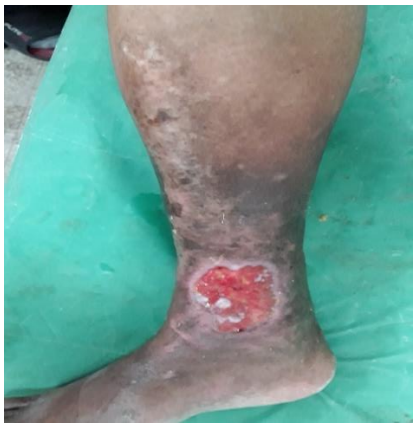

Figure 3: 3rd week of treatment

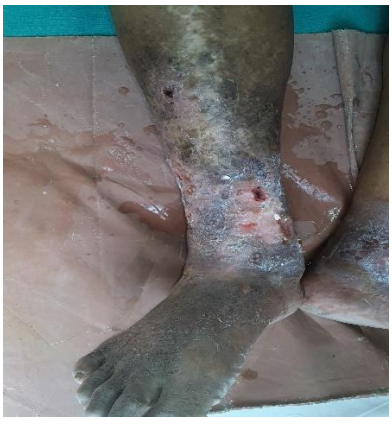

Figure 4: After 4 weeks 'wound healed completely

The meshed unripe papaya dressings were used off and on for approximately 4 weeks to heal the wounds completely. Initially the dressings were changed on a daily basis because of the copious amounts of drainage. The wound floor, surrounded by slough & necrotic tissue which gradually changed to a healthy pink granulation tissue. The patient complained for increased pain when the dressing was removed and also when the wound came into contact with the air.

Once the treatment was completed and the wound was healed the pain decreased significantly. The wound healed completely, within four weeks of treatment.

CONCLUSION

Based on the results of this case study, it was concluded that meshed unripe papaya dressing was beneficial for a non-healing chronic ulcer as it acts enzymatic debridement. Papaya does not only remove the dead and devitalized tissue, but also ensure the growth of healthy granulation tissue.

Leech saliva acts as analgesic, anti-inflammatory, platelet inhibitory and anticoagulant functions as well as extracellular matrix degradative and antimicrobial effects. Anticoagulants activity of saliva act on peripheral arterial occlusion and infectious.

The ulcer was continuing to regress until the unripe papaya dressing treatment was initiated. The dressing may have created an environment that may have helped to decrease the bacterial burden of the wound, which can often be the cause of delay healing of wound.

It also resulted in less frequent dressing changes, which decreased the cost to our health care system. The dressing is a simple treatment modality for non-healing ulcer. Thus, it is suggested that the study should be done on a large sample size to validate the efficacy of meshed raw papaya and leeching in the treatment of non-healing ulcer.

REFERENCES

1. Jarbrink K, Ni G, Sonnergren H, Schmidtchen A, Pang C, Bajpai R, Car J, "Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review". *Syst Rev*, 2016; 5(1):152. https://doi.org/10.1186/s13643-016-0329-y
2. Shenoy K Rajgopal. Manipal Manual of Surgery. 2nd ed. New Delhi: CBS Publishers; 2009.P. 90-98.
3. Das S. A Concise Textbook of Surgery. 3rd ed. Calcutta: published by Dr. S Das 13, Old Mayor's Court; 1992.P.30-38.
4. Bailey & Love's. Short Practice of Surgery, edited by RCG Russell, N.S. Williams, CJK Bulstrode. 26th ed. International Students Edition, published by CRC Press: Tylor & Francis group; 2013.P.52.
5. Health Quality O, "Management of chronic pressure ulcers: an evidence-based analysis" *Ontario Health Technology Assessment Series*, 2009; 9(3):1-203.
6. Vasuki V et al., "Comparative study of papaya dressing versus normal saline dressing in healing of ulcers" International Surgery Journal, 2017; 4(4):1209-1216. https://doi.org/10.18203/2349-2902.isj20171020
7. Tettamanti G & Grimaldi A et.al, "The multifunctional role of fibroblasts during wound healing in *Hirudo medicinalis* (Annelida, Hirudinea)" *Biology of the Cell*, 2004; 96(6):443-455. https://doi.org/10.1016/j.biolcel.2004.04.008
8. Biswas K, Chattopadhyay I, Banerjee RK, Bandyopadhyay U, "Biological activities and medicinal properties of neem (Azadirachta indica)" Current Science, 2002; 82 (11):134-1345.
9. Tettamanti G & Grimaldi A, et.al, the multifunctional role of fibroblasts during wound healing in *Hirudo medicinalis* (Annelida, Hirudinea) *Biology of the Cell*, 2004; 96(6):443-455. https://doi.org/10.1016/j.biolcel.2004.04.008
10. Usmani, M.I. Tanqeehul Mufradat. 1st ed. Delhi: Famous Offset Press; 2008. P. 238.
11. Kabiruddin. Makhzanul Mufradat. New Delhi: Aijaz Publishing House 2861, kuch-e-cheelan, Dariya Ganj; P. 881, 389.
12. Hamdani K. Usool-e-Tib. New Delhi: CCRUM, Farogh-e-Urdu Zuban; 2015.P.454-455.