



HEALING OF A TRAUMATIC WOUND WITH HERBO-MEDICINAL OINTMENT; *MARHAM-E-RAAL*: A CASE STUDY

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DOI: 10.7897/2277-4572.096188

Received on: 19/10/20 Revised on: 14/11/20 Accepted on: 19/11/20

ABSTRACT

Introduction: A wound can be defined as the discontinuity in skin or mucus membrane. Healing is nothing but neogranulation in the depth and neoepithelialization at the edges of the wound which ultimately results in the complete repair of such discontinuity. This case report deals with a patient of traumatic large wound at the heel who receives Unani management for wound healing. He was diagnosed as avulsion of pad of right heel with type-II diabetes mellitus. The treatment plan included mechanical debridement, cleaning with solution of alum powder (*Sufuf-e-zaaj*/alusol) and dressing with *Marham-e-raal*. The patient was advised to continue oral hypoglycemic agent with subcutaneous injection of insulin. On 85th day of treatment, the wound was healed by almost 98% and on subsequent 1st and 2nd follow up, each with a gap of 15 days, no recurrence of wound was recorded. **Methodology:** A male patient of traumatic wound was taken into study and given Unani management plan which included debridement, cleaning and washing with solution of Alum powder (Alusol)/ or, in Unani, *Sufuf-e-zaaj* and dressing of the wound with *Marham-e-raal* with full aseptic precautions for a period of about 3 months. **Discussion:** Wound healing is credited to *muhallil* (anti-inflammatory), *daf'eta'ffun* (antimicrobial), *mujaffif* (desiccant) and *mundamil* (wound healing) properties of *Marham-e-raal* due to presence of several phytoconstituents like camphor, linalool, borneol, cineole, terpenoids, Bergenin, Phenols and flavonoids, hopeaphenol, Oligostilbenoids, Monoterpenes, kaempferol, Quercetin and Catechin. **Result:** The wound completely healed at the end of 3 months with no recurrence noted on the 15th day of follow up after complete healing.

Key words: *Qurooh-e-haad* (acute wounds); *Marham-e-Raal*; Borneol; quercetin; Unani Medicine.

INTRODUCTION

PRESENTATION OF THE PATIENT

A male patient of age around 70 years, visited in surgical OPD of our institute with the main complaint of a single large wound at the heel of right foot which resulted after road traffic accident. He was a known case of type-II Diabetes mellitus for which he had been taking OHAs regularly. He was not suffering from any other severe systemic illness. His diet was good and dietary habit was both veg. and non-vegetarian. Professionally he was a retired principal of senior secondary school.

Medical Presentation

(The medical presentation described below was recorded at the time of patient's admission to our hospital)

According to the statement of the patient, he was quite well before the day of accident, then he underwent roadside traffic accident 15 days back with the wheel of mini vehicle rolling over the right heel of foot resulting into avulsion of the pad of heel. This resulted profuse bleeding. At the same time, he visited nearby orthopedic surgeon where the wound was thoroughly washed, dressed the wound and referred him to plastic surgeon who stitched both the flaps of avulsed wound and started oral medication. After two days of follow up, the stitched area was found to be necrosed, then, he carried out skin grafting which was also rejected within few days and then patient visited us. Now he has a large wound due to avulsion of pad of right heel with crushing pain, restricted movement and difficulty in walking. The

pain is almost continuous which gets worsened on walking on foot, moving right leg and foot, touch and pressure but somewhat gets relieved on rest and taking oral analgesics. He was also complaining of discharge and foul smelling from the wound.

The discharge was thick and yellowish amounting about 3 to 4 ml per day. With all above described complaints, he was admitted in general ward of our institute.

Wound presentation

1. Positions: Heel of the right foot.
2. Number: large and solitary.
3. Shape: Cylindrical shaped.
4. Size: 10x6 cm
5. Depth: 1.5 cm
6. Edges: Irregular and punched out
7. Margins: edematous and necrosed
8. Floor: Covered with yellowish slough and thick yellowish discharge.
9. Granulation: Absent
10. Epithelialization: Absent
11. Discharge: Thick yellowish.
12. Surrounding area: Mildly hyperemic, edematous, hyperpigmented and scaly.
13. Tenderness: Moderate tenderness at the site and surrounding of the wound.
14. Discharge on touch: Thick yellowish discharge present on pressing the surrounding of the ulcer.

15. Examination for vascular insufficiency: All the pulsations like dorsalis-pedis, anterior tibial artery, posterior tibial artery, popliteal artery and femoral artery were very well palpable.

Investigations

Patient, after admission in our hospital, was advised all routine investigations to rule out underlying morbid factors like essential hypertension, anemia and diabetes mellitus etc. The laboratory investigation values were as follows. Hb; 14.3%, Total counts; 9300 cells/mm³, Differential counts (polymorphs; 75%, lymphocytes; 20%, eosinophils; 03%, monocytes; 02%, basophils; 0.0%) and ESR; 56mm/1hr. blood sugar level was elevated i.e. fasting blood sugar; 130 mg/dl, post prandial blood sugar; 160 mg/dl and HbA1C; 9.1%. Serological findings were normal i.e. HIV I&II as non-reactive and HbsAg as negative. Wound swab was sent to lab for culture and sensitivity and the report showed the heavy growth of *Pseudomonas aeruginosa* after 48 hours of aerobic incubation. X-ray foot showed no evidence of bony involvement in any kind of pathology (Figure-9).

TREATMENT GIVEN TO THE PATIENT

After deep insightfulness of detailed clinical picture, physical examination, and laboratory investigations, the patient was diagnosed as traumatic wound. Patient was advised Unani medical intervention. An ointment i.e. *Marham-e-raal* was used for topical application after proper washing and cleaning of the

wound area with solution of *sufuf-e-zaaj* (alum powder solution/alusol) on daily basis until the wound completely healed. Orally he was advised a combination of amoxicillin-500mg and clavulanic acid-125mg twice daily for a period of 7 days. Injection of insulin in a dose of 14 and 12 IU subcutaneously and other oral hypoglycemic agents were continued as it is. In addition to this, he was instructed to maintain the personal hygiene, daily changing of clothes and intermittent movement of bilateral knee and ankle joints in order to avoid joints freezing.

RESULTS

The mean size of ulcer before treatment was 60cm² and at end point of study it reduced to 0.0cm². Before treatment the healthy granulations were 0% and at 15th day only, they increased to almost 100% and continued as such until complete covering of the wound (Figure 3). At baseline there was no epithelialization, but active and neo-epithelialization appeared at about 15th day of treatment and this continued to be active until complete covering of the wound (Figures 4 to 7 illustrate active epithelialization). The depth, which was 1.5cm before commencement of treatment, completely filled up with healthy and neo-granulations at the end of treatment (Figure 8). The hyper-pigmentation of the surrounding area was not much improved, but tenderness almost disappeared after completion of the treatment. Table 1 illustrates comparison of different wound parameters before and after the treatment.

Table 1: Comparison of different wound parameters before and after the treatment

S. No	Parameter	Before treatment	After treatment
1	Positions:	Heel of the right foot.	Wound completely healed
2	Number:	large and solitary.	Wound completely healed
3	Shape:	Cylindrical shaped.	Wound completely healed
4	Size:	10x6 cm	0
5	Depth:	1.5 cm	0
6	Edges:	Irregular and punched out	Wound completely healed
7	Margins:	edematous and necrosed	Wound completely healed
8	Floor:	Covered with yellowish slough and thick yellowish discharge.	Pinkish read healthy granulation
9	Granulation:	Absent	Pinkish read healthy granulation
10	Epithelialization:	Absent	100 % epithelialized
11	Discharge:	Thick yellowish.	Absent
12	Surrounding area:	Mildly hyperemic, edematous, hyperpigmented and scaly.	Non edematous, non-scaly, smooth and healthy surrounding
13	Tenderness:	Moderate tenderness at the site and surrounding of the wound.	Absent
14	Discharge on touch:	Thick yellowish discharge present on pressing the surrounding of the ulcer.	Absent
15	Examination for vascular insufficiency:	All the pulsations like dorsalis-pedis, anterior tibial artery, posterior tibial artery, popliteal artery and femoral artery were very well palpable.	All the pulsations like dorsalis-pedis, anterior tibial artery, posterior tibial artery, popliteal artery and femoral artery were very well palpable.



Figure: 1 Day '0'



Figure: 2 Day '15'



Figure: 3 Day '30'



Figure: 4 Day '45'



Figure: 5 Day '60'



Figure: 6 Day '75'



Figure: 7 Day '80'



Figure: 8 Day '90'



Figure-9: X-ray right foot with anterior and lateral projections. No bony pathology detected

DISCUSSION

As per the literature of *Unani* medicine, *Marham-e-Raal* is indicated in the treatment of wounds. It ensures the growth of healthy tissue and thereby helps in wound healing. It also removes the dead and devitalized tissue from the wound.¹ Molecular action of *Marham-e-raal* has been explained as the enhancing action for the collagen concentration and stabilization of fibers at wound bed. It also hastens the epithelialization process and adds more to wound contraction.²

Mom (bees wax) is one of the most important content of the *Marham-e-raal* (an ointment). It increases the effectiveness of this ointment by increasing the penetration of its contents into the tissue.³ The crude beeswax exhibits antibacterial activity against several bacterial strains and *Candida albicans* (*C. albicans*) yeast. The sample of beeswax has been proved effective against both Gram-positive and gram-negative bacteria.⁴ *Kafoor* (*Cinnamomum camphora*) is another important constituent of the *Marham* (ointment). It has antiseptic, stimulant and rubefacient activity. When *Kafoor* is applied locally, it results in hyperemia at the site through its vascular dilatation activity and aids in healing³ It also exhibits antiseptic, demulcent and anodyne properties.^{5,6} Camphor, linalool, borneol and cineole, important phytochemicals of *Kafoor*, have been proved to be efficient in the mechanism of wound healing. Linalool is effective against *Candida albicans*, *Escherichia coli* and *Staphylococcus aureus*, but not against *Pseudomonas aeruginosa*.⁷ The healing properties

of borneol are attributed to the properties like putridity elimination and flesh regeneration, and repair of damaged cells.⁸ *Raal hindi* (*Vateria indica* Linn.) has detergent activity⁶ and helps in the cleaning of the wound by removing the pus and discharge from the wound. Ointment containing *Raal hindi* (*Vateria indica* Linn.) are beneficial in treating long standing wounds.³ Apart from above, *Raal hindi* possesses anti parasitic and rubefacient properties.⁵ The aqueous and ethanolic extract of *Vateria indica* Linn. contains alkaloids and glycosides; bergenin.⁹ Bergenin, a natural secondary metabolite glycoside, has been known for antifungal and anti bacterilal,^{9,10} antiviral, anti-inflammatory, antiulcerogenic, antidiabetic and wound healing properties.¹⁰ *Kaat hindi* (*Acacia catechu*) has anti-pruritus activity. Ointment of *Kaat hindi* (*Acacia catechu*) is effective in management of ulcers due to burn and syphilis. Its *sufuf* (Powder) exhibits haemostatic activity when sprinkled over the wound³ *Kaat hindi* has been well known for possessing intense astringent and anti-parasitic properties.^{5,6} The Catechin, which is a flavonoid, has an effect on endothelium dependent vasodilation which helps in maintaining normal blood flow.^{11,12}

Kaempferol is a flavonoid and known to have ability to modulate inflammation. Quercetin inhibits inflammatory enzymes cyclooxygenase (COX) and lipooxygenase thereby decreasing inflammatory mediators such as prostaglandins and leukotrienes. The anti-ulcer activity of quercetin is due to its free-radical scavenging properties.¹³

Zaaj abyaz (alum) is widely known for exhibiting a potent *Qaabiz* (astringent) and *Mundamil-e-qurooh* (healing) characteristics. If applied locally, it results in drying up the wound discharge thereby developing a ground for further healthy granulations.¹⁴

CONCLUSION

The wound completely healed at the end of three months of treatment. The patient got complete relief in terms of healing, pain and itching at the site of ulcer. No local and systemic reaction of ointment was noted during and after treatment. No recurrence of wound was noted at one month follow up after completion of treatment. The Unani formulation; *Marham-e-raal* must be tried on the large number of cases of acute as well as chronic wounds in order to draw inferences related to its healing properties.

COMPLIANCE WITH ETHICAL STANDARDS

Consent: Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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How to cite this article:

Saiyad Shah Alam et al. Healing of a Traumatic Wound with Herbo-Medicinal Ointment; Marham-E-Raal: A Case Study. J Pharm Sci Innov. 2020;9(6):152-155.
<http://dx.doi.org/10.7897/2277-4572.096188>

Source of support: Nil, Conflict of interest: None Declared

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