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Case Study RRJoUSH

Diabetic Foot Ulcer Treated Successfully with Unani Formulation (*Sibr Zard, Amba Haldi, Mur Maki*, and *Gulnar*)—A Case Study

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Abstract

Diabetic foot ulcer is a distressing complication of diabetes mellitus. It is encountered in about 15% of patients living with diabetes mellitus. It is a major cause of morbidity and mortality. The patients with diabetic foot ulcer are at the risk of prolonged hospitalization, infection, gangrene, amputation, and even death if effective wound care facilities are not provided. It is anticipated that approximately 50–70% of all lower limb amputations are due to diabetic foot ulcer. According to estimation, in every 30 second one leg is amputated due to diabetic foot ulcer. The management of diabetic foot ulcer has always been a challenging task as the ulcer shows no tendency towards healing. It is very difficult to treat such ulcer with conventional methods of antiseptic dressing and it requires prolonged hospitalization. In view of higher incident of diabetic foot ulcer and non-availability of affordable treatment, the present study was designed to access the effect of the Unani formulation containing Sibr Zard, Amba Haldi, Mur Makki, and Gulnar in the treatment of the diabetic foot ulcer. After proper cleaning of the wound with Neem (Azadirachta indica) leaves water, a fine powder of the test drugs—Sibr Zard, Amba Haldi, Mur Makki, and *Gulnar—was sprinkled over the wound, dressing was done with sterilized gauze piece, and bandage were applied. Dressing was done regularly under full aseptic precaution. At the end of 150 days of study, 97.7% of healing of the ulcer was achieved.*

Keywords: diabetic foot ulcer, *Qurooh-E-Aseerul-Indimal*, Unani medicine, diabetes mellitus, Neem

INTRODUCTION

Diabetes mellitus (DM) is a major health problem worldwide. Its incidence has increased dramatically over the past two decades [1, 2]. According to epidemiological studies, the total number of patients with DM were about 30 million in year 1985, 177 million in year 2000, 285 million in year 2010 and if the same situation continues, there will be more than 360 million by the year 2030 [3, 4]. Patients with DM are more prone to develop multiple complications including diabetic foot ulcer (DFU). DFU is a distressing complication of DM. It is encountered in about 15% of patients living with DM [5–7]. It is a major cause of morbidity and mortality. The patients with DFU are at the risk of prolonged hospitalization, infection, gangrene, amputation, and even death if effective wound care facilities are not provided [8–11]. It is anticipated that approximately 50–70% of all lower limb amputations are due to DFU. The rate amputation of lower limb in diabetics is 15 times higher than nondiabetics [12]. According to estimation, in every 30 second, one leg is amputated due to DFU [13]. The quality of life with DFU is badly affected as it

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results in restricted mobility, dependency, decreased work efficiency and brings psychological instability [14]. According to a report for healing of a single ulcer, it costs approximately $$17500 (1998 United States Dollars). In cases if, amputation is required, it may cost around $30000–$33500 along with some other economic burden [15, 16].

The management of DFU has always been a challenging task as the ulcer is very resilient and does not show any tendency toward healing. It is very intricate to treat such cases of ulcer with conventional methods of antiseptic dressing. Advanced wound care therapies are more complex and have certain limitation in their applicability and above all they are not suitable for the infective wound like DFU. In view of its higher incidence and non-availability of the affordable treatment, the present study was designed to access the effect of Unani formulation containing *Sibr Zard, Amba Haldi, Mur Makki,* and *Gulnar* in the treatment of DFU.

CASE SUMMARY

Presentation

A female patient aged 54 years with DFU was included in the present study after obtaining the informed and written consent.

Medical Presentation

According to the statement of the patient, she was apparently well approximately 1 year back. Following this she developed redness over the base of right great toe. Redness increased significantly within 3–4 days and involved the whole of the right great toe; subsequently a small blister filled with pus developed at the site of redness. The blister ruptured spontaneously with discharge of pus and the site blister got eroded and took shape of small wound. The size of the wound increased gradually over the time, eventually exposing the underlying structure and the remaining tissue around the right great toe got blackened. She also complained of throbbing type of pain along with foul smelling discharge from the wound. Patient also had a history of Type-2 diabetes mellitus (DM-T2) since 10 years and hypertension. There was no history of Koch's disease, sexually transmitted disease (STD), and human immunodeficiency virus (HIV) infection. With the above complains, she visited the Jarahat (Surgery) outpatient department (OPD) at the Majeedia Unani Hospital, Jamia Hamdard, New Delhi, India and got admitted for further evaluation and management with Unani formulation.

TREATMENT GIVEN

After proper cleaning of the wound with Neem (*Azadirachta indica*) leaves water, a fine powder of the test drugs—*Sibr Zard, Amba Haldi, Mur Makki,* and *Gulnar*—was sprinkled over the wound and dressing was done with sterilized gauze piece and bandage were applied. Dressing was done regularly under full aseptic precaution. During the course of treatment, right great toe got auto-amputed as it was gangrenous and devitalized since the day of admission. Debridement of the wound was done as per need to remove the dead and devitalized tissue. The patient was instructed to maintain personal hygiene. The protocol of the study was followed up to 150th days and the assessment of the wound was done on every 30th day. All remedial measures were taken to control DM-T2 and high blood pressure.

RESULT

Size of the Wound

The size of the wound on 0^{th} day was approximately 180 cm^2 which reduced to 120 cm^2 on 30th day, 96 cm^2 on 60th day, 72 cm^2 on 90th day, 20 cm^2 on 120th day, 4 cm^2 on 150th day of the study.

Granulation Tissue

There was no healthy granulation tissue on 0th day of the study and the floor of ulcer was covered with pale unhealthy granulation tissue along with slough. At the end of 30th day of the study, approximately 40% of granulation tissue was evident on the floor of the ulcer which increased to 90% on 60th day and approximately 100% healthy granulation tissue appeared by 90th day of the study.

Epithelialization

No significant epithelialization was seen on the baseline day of the study and edge of the ulcer was inflamed and edematous with few pus pockets on the ventrolateral aspect of the foot. At the end of 30th day of the study, approximately 35% of new epithelialization was achieved on the floor of the ulcer which increased to 46% by the end of 60th day of the study. Approximately 56% of epithelialization was achieved by 90th day of the study. About 88% of epithelialization was achieved by 120th day of the study. Approximately 97.7% of epithelialization was achieved by 150th day of the study.

Amount of Discharge

On the baseline day, discharge was copious, purulent and strong foul smelling. At the end of 30th day of the study, the amount of discharge decreased which was purulent but it was less foul smelling. At the end of 60th day of the study, the discharge became serous and scanty with no foul smelling. It ceased completely by 90th day of the study.

Tenderness

On the baseline day, tenderness was 3+ which got reduced by 30th day and was graded as 2+, it reduced significantly by 60th day and was almost absent by the end of 90rd day of the study. Table 1 shows the assessment of various attributes at different point of time and Figures 1(a–f) shows the images at different point of time.

Table 1. Assessment at different point of time.

	Attributes	Day '0'	Day '30'	Day '60'	Day '90'	Day '120'	Day '150'
CASE=1	Area of wound (in cm^2)	180	120	96	72	20	4
	Healthy granulations tissue (%)	0	40	90	100	100	100
	Epithelization (%)	0	35	46	56	88.8	97.7
	Tenderness (Grading)	3+	2+	1+	0	0	0
	Discharge	Copious, purulent and strong foul smelling	Decreased amount of purulent discharge with less foul smelling	Serous and scanty with no foul smelling	Absent	Absent	Absent

Figure 1. Images at different point of time.
(a) Day 0, (b) Day 30, (c) Day 60, (d) Day 90, (e) Day 120, (f) Day 150.

DISCUSSION

According to the concept of Unani system of medicine, the drugs having *Mujaffif* (desiccant), *Khatim* (cicatrizent), *Daaf-E-Taaffun* (antiseptic), and *Mundamil-E-Qurooh* (healing) actions are effective in the treatment of non-healing ulcer. The constituents of the formulations are *Sibr zard* (*Aloe barbadensis*), *Amba haldi*, *Gulnar* (*Punica granatum Linn.*), and *Mur maki* (*Comiphora myrrh*). This formulations exhibits the action such as *Mujaffif-E-Qurooh* (desiccant), *Mundamil-E-Qurooh* (healing drug), *Daaf-E-Taaffun* (antiseptic), *Khatim* (cicatrizent), and *Habis-Ud-Dam* (haemostatic) which favors the healing of an ulcer [6, 17, 18]. The healing activity of the above formulation can also be explained on the behalf of the actions of its phytoconstituents such as curcumin (anti-inflammatory activities), monoterpenoids, sesquiterpenoids, and curcuminoids (antimicrobial, antioxidant, and scavenging activity), heerabolene, eugenol, furanosequiterpenes, monoterpenes, tannins, terpenoids, sterols and flavonoids (cytoprotective, anti-inflammatory, antioxidant, and healing effects) [19, 20].

CONCLUSION

The above Unani formulation conserves the potency in the treatment of DFU. This formulation is also effective in the removal of dead and devitalized tissue. It ensures the growth of healthy granulation tissue and also helps in the early epithelization. Besides, it also poses both analgesic and haemostatic activity. Local application of this formulation is very easy and it requires no specialized training. Above all, it is very cost effective and can be a relied alternative to the conventional regimen of DFU.

Conflict of Interest

There is no conflict of interest between the authors.

Limitations

The major limitation of the present study was its sample size as it comprised of only one patient. A randomized and control study on a large sample size is suggested to derive a reliable inference in term of safety and efficacy of tested Unani formulations.

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