



Management of Diabetic Foot Ulcer with *Khadira Kashaya Dhawana* and *Nimba-patra-Haridra Kalka* Dressing

Neha Sat Paul^{1*}, M.J.Qadri² and Swati Kadam³

¹⁻³Shalyatantra Department, Government Ayurvedic College and Hospital, Osmanabad, Maharashtra, India

Abstract

Diabetic foot ulcer is a severe clinical manifestation of Diabetes Mellitus. In India, every 20 seconds, a limb is lost due to Diabetes. 200000 leg amputations occur every year due to diabetes. Diabetes affects blood circulation and diabetic neuropathy which damages nerves. These two conditions lead to complications with lower extremities in diabetic patients. It is very important for diabetic patients to take care of their foot. Once ulcers have developed, whatever may be the cause (neurogenic, ischaemic or both), any dead tissue of the surface should be debrided, the wound is cleaned, and dressings are applied. As the modern medical science has limited scope for the management of these ulcers hence, Ayurveda has the unique concept for management of *Madhumehajvrana* (diabetic wound). *Shodhana* (cleaning) and *Ropana* (healing) are the key factors in the management. *Khadiratvaka* (Acacia catechu) has the property of *Vranashodhana* (cleaning wound) which debrides the wound and local application of paste of *Nimbapatra* (leaves of *Azadirachta indica*) and *Haridra* (*Curcuma longa*) helps to heal the ulcer. This is due to *Ropana* (healing) property of *Nimba* and *Haridra Kalka* (paste). The combinations of these three drugs along with controlling blood glucose level have shown better results in healing such ulcers. Diabetic foot ulcer is quite difficult to heal in modern medical science. So, Ayurveda gives a better approach here.

Keywords

Diabetic foot ulcer, Khadira, Nimba, Haridra, Madhumehajanya Vrana



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INTRODUCTION

The diabetic foot is considered one of the most significant complications of diabetes, representing a major worldwide medical, social and economic problem that greatly affects patient's quality of life. It has been estimated that every 20 seconds a lower limb is amputated somewhere in the world because of diabetes. Diabetic foot is defined as any infection due to chronic or acute injury to the soft tissues of the foot of diabetic patient, with evidences of existing neuropathy and/or ischemia.

In Ayurveda texts, *Madhumeha* is described as one of the four types of *Vataj prameha*¹. Out of eight *Mahagadas* described in *Sushruta Samhita*, *Prameha* is one of them, and these *Mahagadas* are *Dushchikitsya* (difficult to treat)². If *Prameha* is left untreated, it gets converted to *Madhumeha* which is *Asadhya* (incurable)³. But the *MadhumehajVrana* (diabetic ulcer) is described as *Kashtasadhya Vrana* (ulcer difficult to treat)⁴. If any type of *SadhyaVrana* either *Sukhsadhya* or *Kastasadya* is left untreated, it becomes *Yapya* (seldom survive) and then goes to *Asadhyaawastha* (incurable stage). So, special care is needed to take care of

Madhumehajanyavrana (diabetic wound). For better healing, proper *Shodhan* (cleansing of the wound) is required and after that *Ropana* (healing) occurs quickly⁵. Ayurveda has better management to treat these wounds. From ancient times Ayurveda *Acharayas* have already illustrated the proper care of wound healing with various herbal drugs. Cleaning of the wound with *Khadiratwakakashaya* (decoction of Acacia Catechu), then local application of *Kalka* (paste) made of *Haridrachurna* (powder of Curcuma longa) and *Nimbapatra* (leaves of *azadirachta indica*) have better effects in healing of the ulcer. *Khadira* (Acacia catechu) has *Shonitasthapana* (hemostatic), *Kandugna* (Anti-pruritic), *Kaphashoshaka* (subsiding kapha), and *Dhatushoshana* (Astringent) properties. *Haridra* (curcuma longa) has excellent *Raktaprasadaka* (Blood purifier), *Raktastambhaka* (Hemostatic), *Vedanasthapka* (Analgesic) properties. *Nimba* (*Azadirachta indica*) is *Jantugna* (Anti helminthic), *Vranashodhaka* (purification of wound). Thus, these herbal drugs can show the better effects in controlling the ulcer.

DIABETIC FOOT ULCER



Foot is a complex structure with many layers of muscle, ligaments, joints, arches, fat, thick plantar fascia, vascular arches, neurological system which maintains weight bearing, gravity, normal walk, stability and gait (swing and stance phases)⁶.

TREATMENT

Firstly, Diabetes should be controlled. A key feature of wound healing is stepwise repair of lost extracellular matrix ECM that forms the largest component of the dermal skin layer. The basic principle of diabetic foot ulcer management is to provide a moist, but not wet, wound bed and also to maintain good blood supply to the foot. It includes: Antibiotics (decided by pus culture and sensitivity), regular dressing of the wound, low dose aspirin; control of diabetes by Insulin only, diet control, drugs like vasodilators, Pentoxifylline, etc.; amputations of the gangrenous area and care of the feet.

MADHUMEHAJ VRANA-

In *Sushruta Samhita*, the word 'Vrana' originated from *Dhatu 'Vru-Vrunoti, Vrunute, Vrut-Varayat-Khadayat-aacchadayat'*; which means to cover, to conceal and to envelope. Vrana can be

defined as any pathology in which there is consumption of body tissue and formation of scar after healing that remains for a lifetime⁷. In *Sushruta Samhita*, definition of *Vrana* (ulcer) is very vast. Such *Vrana* (ulcer) can be *Nija* (caused by vitiation of *Dosha*) or *Aagantuja* (caused by external factors) depending upon the aetiology. When a patient suffering from *Madhumeha* (Diabetes mellitus), develops *Vrana* (ulcer), it becomes a challenge for a physician to deal with it as both the disease *Madhumeha* (diabetes mellitus) and the *Vrana* (ulcer) are needed to be treated.

In *Madhumeha* (Diabetes Mellitus), there is mainly *Kaphadushti* (vitiation of *Kaphadosha*). This leads to *Kledavruddhi* (increased levels of metabolic waste) in the body⁸. *Aasyasukham, Swapnasukham* (sleeping daytime), *Dadhisewan* (eating curd), etc. are the etiological factors which lead to the development of *Prameha*⁹. In this state, there is *Prabhut-Aavil-mutratvam* (increased frequency and turbidity of micturition)¹⁰. If such urination continues for a long time, it leads to *Ojakshaya* (immune deficiency) and *Dhatushithilta*. Bala of any person depends upon the level of *Kapha* and *Oja* (immunity) present in his body. In *Madhumeha* (Diabetes



mellitus), patients are immune-compromised due to *Oja Kshya* (immune deficiency) and *Kapha-dushti* (vitiation of *Kaphadosha*). If any type of *Updrava* (complications) occurs to such patients, it becomes too difficult to deal with the patient.

Thus, *Sushruta* has mentioned *Madhumehajanya Vrana* (ulcer due to DM) as *Kashtyasadyavrana* and explained line of treatment same as that of *Dushta Vrana* (infected wound)¹¹. The drugs which have *Tikta* (bitter)-*Kashaya* (astringent) *rasa* (taste), *Shodhan* (cleansing)-*Ropana* (healing) properties can be effective in such ulcers. *Carakasamhita* has also described *Shalyakriya* (surgery), *Shodhana* (cleansing)-*Ropana* (healing) of *Updravas* (complications) caused due to *Madhumeha* such as *aspidika* (carbuncle)¹².

DISCUSSION

Khadira (*Acacia catechu*) has *Tikta* (bitter)-*Kashaya* (astringent) *rasa* (taste), *Katu Vipaka* (metabolic property after digestion), *Sheetavirya* (cold potency), *Ruksha* (dry)-*Laghu* (light) *Gunas* (physical properties)¹³. *Khadira* is a very famous skin benefiting *Ayurvedic* herb.

Acharya Charaka has mentioned it in *Udardprashmanamahakashyaya* (herbs used in urticaria)¹⁴ and in *Kashayaskanda* (herbs with astringent taste)¹⁵. *Acharya Chakraduttha* has mentioned it as *Vednasthapka* (analgesic). It has excellent properties as *Medoghna* (anti-obesity), *Shonita Sthapana* (hemostatic), *Kaphanashak* (destruction of *kaphadosha*), *kandugna* (anti-pruritic), and *dhatushoshana*¹⁶. *Acacia catechu* has twelve compounds like Catechin, Epicatechin, phenol, Mesquito, Kaempferol, Aromadendrin, etc. It is an anti-oxidant because of Methanol, Catechin. Aqueous extract of the whole plant is proved to be immune modulatory. It is also Antipyretic, Anti-inflammatory, and Anti-mycotic. Methanol extract of *Acacia Catechu* is Anti-hyperglycaemic and Antinociceptive. *Khadira* is one of the contents of *Kaakolyaadigana*, which are mentioned for *Vrana ropana*¹⁷.

Nimba (*Azadirachta indica*) has *Tikta* (bitter)-*Kashaya* (astringent) *rasa* (taste), *Katu Vipaka* (metabolic property after digestion), *Sheetavirya* (cold potency), *Laghu* (light) *Guna* (physical property)¹⁸. It has *Krimi-Mehanuta* (anti-helminthic and anti-diabetic),



Vrananashak(anti-ulcer),
Kaphanashaka(*Kapha* suppressor),
Graahi(Astringent) *ingunas*(properties). Its leaves are
Shothaghna(anti-inflammatory),*Twakadosha hara* (skin purifier), *Vranashodhaka*(ulcer cleaner),*Vranaropaka*(ulcer healer)¹⁹. Isomeldenin, Nimbin, Nimbinene, Nimbandiol, Quercetin, Beta-sitosterol, Desacetylnimbinene are the active ingredients of *Nimba* leaves extract. It is also potent anti-microbial.

Haridra(*Curcuma longa*) is *Katu*(pungent) and *Tikta*(bitter) in taste,*Ruksha*(dry) in property. It acts against *Kapha* and *Pitta dosha*²⁰. It is helpful in improving immunity. Curcumin present in it is a potent anti-inflammatory agent. It protects the skin by increased collagen deposit, angiogenesis and improved wound healing.

These three drugs have *Tikta rasa* in common. *Tikta rasa* has *Vayu* and *Aakashmahabhuta*, *Kashaya rasa* is composed of *Vayu* and *Prithvi*, whereas in *Katu rasa* *Vayu* and *Agni* is present. So, according to *Panchbhautika* composition of these drugs, there is combination of *Vayu*, *Prithvi*, *Agni* and *Aakash*. *Vishadaguna* is comprised of these *Mahabhutas* and this *Vishadaguna* has property of *Kshalana*

Karma as explained by *Hemadri*. This *Kshalana karma* of these drugs is actually responsible for curing such ulcers. The *Vishadaguna* provides clearness, provides transparent nature, washes away dirt, *Kledaachoshana*(exploitation of metabolic wastes), *Mala shoshana*, *lekhana* and *Vranaropana*.

Due to *Tikta Rasa* of these drugs, *Shodana*, *Kleda-medo-vasa-Puya Upshoshana* occurs²¹. *Kashaya Rasa* of these drugs helps in *Shodhana*, *Lekhana*, *Kledaopshoshana*, and *Ropana* of the ulcer²². *Katu-rasa* has also properties of *kushtakanduupshamana*, *kaphakrimivishaupshamna*, *medsaamuphanta*.

The formulations *Kwatha* (decoction) and *Kalka* (Paste) are advised to use here. As in *Sushrutasamhita*, out of 60 *Vrana-upkramas* mentioned, these two are especially indicated for *Shodhana*(Cleaning) and *Ropana*(healing) of *Vrana*²³.

CONCLUSION

Diabetic foot ulcer is such a complication of Diabetes Mellitus that it needs a lot of attention towards both the disease and the complication. If DM is not controlled, whatever treatment and care of the foot ulcer we do, the results will be zero. There are



limitations in modern medicine to deal with diabetic foot ulcer. With the help of above mentioned regimen, there can be a breakthrough approach to treat such ulcers provided sugar levels are under control. The combination of these drugs has unique property of cleaning of the wound due to its *Vishadaguna* (property of clearness). It proves better than allopathic strategies of cleaning and dressings of the wound. This herbal approach towards diabetic foot ulcer management underlines the healing power of nature. Let the body heal with nature.



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