

CASE STUDY

Ayurvedic Management of Diabetic Foot Ulcer – A Case Report

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ABSTRACT

Diabetic foot ulcer (DFU) is the most typical complication of diabetes mellitus with a poor prognosis due to micro and macrovascular changes as a result of uncontrolled sugar level. Ayurveda has considered such ulcers as Dushta Vrana and many modalities like oral medication, blood-letting, wound debridement etc. have been advocated for their management. Present case report deals with a male patient aged 49 years, having a diabetic ulcer on the dorsal aspect of left 5th toe and adjoining redundant webspace. He already had an amputation of his first four toes three years back. The patient was an estab case of diabetes mellitus type II and hypertension and was on medication for both disease conditions. We gave him adjuvant Ayurvedic medicines to control his blood glucose level and hypertension. The wound also managed on Ayurvedic lines. This treatment resulted in complete wound healing.

Keywords : *Diabetic foot ulcer, Amputation, Wound healing, Leech application, Prameha Pidika.*

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Introduction:

Madhumeha, a disease condition in Ayurvedic literature, can be correlated with diabetes mellitus and Prameha Pidika with diabetic foot ulcer (DFU). Prameha Pidika comes under the category of Dushta Vrana (Infected & dirty wound) as a Dushchikitsiya (challenging to manage) entity^[1]. Madhumeha is the last stage of Prameha which is a yapya (challenging to cure) type of disease^[2]. Glucose laden tissue as a result of prolonged hyperglycemia leads into multiple changes at micro-vascular, neurological and dermal level. Vascular changes cause ischemia in lower limbs, particularly at foot level. Complications of lower extremities are challenging to treat in diabetes patient and especially in foot region^[3]. People with diabetes have an 11% higher wound infection rate as compared to wound infection in general population^[4]. Diabetic ulcer exhibit delay in the formation of healthy granulation

tissue due to extended inflammatory phase observed in histopathological studies of such ulcers^[5]. With time, changes occur in a diabetic patient like alteration in renal function, diabetic neuropathy, increase in the rate of infection, impaired wound healing capacity due to obstruction in the blood supply at macro and microvascular level^[6].

Diabetic foot ulcer (DFU) is a type of non-healing ulcer that requires surgical intervention in the form of debridement till the wound healed. Limb amputation is the last choice to treat the DFU. Many oral Ayurvedic formulations are there to control diabetes mellitus and DFU along with local treatment. These formulations maintain sugar level, eradicate toxins, improve circulation and enhance wound healing^[7]. In the management of Madhumeha, Dushta Vrana, Sushruta has emphasized upon Shodhana and Raktamokshana^[8]. Raktamokshana (bloodletting) is advised in painful conditions, swelling and suppuration in Prameha Pidika (DFU)^[9]. Leech application is the best para surgical modality which can be used in children, females, pregnant patients and elderly^[10].

Case Report

A male patient aged 49 years, came to the hospital with the complaints of swelling, pus discharge, foul smell and non-healing wound over left side foot at 5th toe (dorsal aspect), and redundant web space between 4th and 5th toe since four months. The patient was known case of diabetes mellitus and hypertension for five years and was on medication (Tab. Glimpiride 1mg BD and Tab. Amlodipine 2.5mg BD). History of surgical amputation of 1st to 4th toes at a private hospital about three years back was there. Amputation confirmed by the presence of scar marks on the plantar aspect of the foot. He was admitted for wound management. His laboratory investigations were within normal limit except random blood sugar 195.6 mg/dl, HbA1c- 8 %, Blood Urea-48.5 mg/dl, Serum Creatinine-2.5 mg/dl. Urine examination revealed proteins, sugar, pus and epithelial cells. After two days of admission, he developed a small abscess at upper 1/3rd of the left leg which was drained under local anaesthesia with standard precautions. Expert

opinion was taken for renal function and diabetes from the Department of Kayachikitsa (Internal medicine) and managed accordingly.

Local treatment

1. Daily dressings were done with Kasisadi Tailam (an Ayurvedic medicine) along with surgical debridement regularly till the wound became tidy.
2. Leeches applied once a week for one and a half months (6 sittings). In every sitting two leeches on the wound of foot and two leeches on wound on upper 1/3rd part of the left leg were applied.

Systemic treatment

Orally we gave Tab. Triphala Guggulu 2 BD, Tab. Arogyavardhini Vati 2 BD, Amalaki Churna 3gm+ Shudha Gandhak 125mg+ Rasa-manikya75mg BD with luke warm water, Madhumehar Churna 5gm BD, Avipatkar Churna 3 gm+ Pushkarmool Churna 2 gm+ Jaharmohra Bhasam 250 mg with luke warm water, Trinpachmool Kashaya 40 ml BD and Trunikusumakar Churna 5 gm at night time.

Discussion

For the management of diabetes mellitus, hypertension and ulcer; Ayurvedic anti-diabetic and anti-hypertensive treatment (as adjuvants to conventional treatment), local application of Kasisadi Tailam and leech application were used. Because the control the glucose level in diabetes mellitus patient is extremely important for the treatment of diabetic foot ulcers for suppression infection and proper healing. The Vrana (ulcer) which is very painful, having a foul smell, discolouration, copious purulent discharge has been termed as Ashuddha Vrana or Dushta Vrana (Infected/unhealthy wound) and requires Shodhana (cleansing) as per Acharya Charaka¹¹. Within the time of two weeks, Dushat Vrana (Infected wound) came in the category of Shudha Vrana (clean wound) with the help of anti-diabetic treatment, wound debridement and leech therapy and by local application of Kasisadi Tailam¹². As the treatment started the foul smell and pus discharge slowly reduced and blood sugar level came under control. The swelling at the foot region also decreased.

Continuation of the treatment wounds became clean, and signs of healing appeared. Gradually the wound size reduced, and wound margins became bluish, showing the stage of Rohita Vrana (healing wound)^[13]. The wound healed completely after six weeks of treatment. During the whole course of treatment, not even a single antibiotic was prescribed. Pathya-apathya (Diet and Lifestyle regimen) were advised to the patient as advocated by Sushruta^[14]. Possibly leech application enhances wound healing in two ways; firstly by improving the blood circulation and clearing the microthrombi and secondly by sucking deoxygenated blood which paves the way for fresh blood. This leads to an increase in the perfusion of blood in the wound area and trigger to release venous congestion in the surrounding area. Suction by leeches creates pressure in the wound area to initiate wound contraction and enhance proliferation of new tissue. Other benefits of leech application are pacifying the glucose level at the cellular level, help to control the rate of infection.

Conclusion

This case study has highlighted and proved the potentials of Ayurvedic principles of wound management in diabetic foot ulcer. By judicious use of the Ayurvedic principles of wound management and strict blood sugar control can heal the diabetic foot ulcers without the use of antibiotics locally or systematically.

Ethics declarations

Conflict of interest

All The authors make a declaration that they have no conflict of interest.

Ethical approval

As this is a case report hence does not need any ethical clearance.

Disclosure of Funding

No funds have been received in support of this work. No benefits in any form have been or will be obtained from a commercial party related to, directly or indirectly, the subject of this article.

Declaration of patient consent

Authors certify that they have obtained consent from the patient and his attendants for the clinical history and images to be reported in the journal while maintaining confidentiality.

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Altered Blood Investigations				
Days	FBS/RBS	Postprandial blood sugar	Serum Urea	Serum Creatinine
07 January 2020	195.6 mg/dl (RBS)	-	48.5 mg/dl	2.9 mg/dl
11 th Jan 2020	133 mg/dl	231.8 mg/dl	-	-
15 th Jan 2020	111 mg/dl	250.5 mg/dl	39 mg/dl	3.1 mg/dl
20 th Jan 2020	92 mg/dl	158 mg/dl	34 mg/dl	1.9 mg/dl
27 th Jan 2020	75 mg/dl	135.8 mg/dl	-	-
03 February 2020	74 mg/dl	168.9 mg/dl	32.5 mg/dl	1.9 mg/dl
10 th Feb 2020	75 mg/dl	147.8 mg/dl	32.1 mg/dl	1.8 mg/dl

Wound at left forefoot	Wound at upper 1/3 part of left Leg
 <p>1</p>	 <p>2</p>
 <p>3</p>	 <p>4</p>
 <p>5</p>	 <p>6</p>
 <p>7</p>  <p>8</p>	 <p>9</p>
 <p>10</p>  <p>11</p>	 <p>12</p>



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सारांशः

अनियंत्रित शुगर स्तर के परिणामस्वरूप सूक्ष्म और स्थूल रक्त वाहिकाओं के परिवर्तनों के कारण डायबिटिक फुट अल्सर (DFU) होता है जो की मधुमेह की सबसे सामान्य संवृति है। सबसे अच्छा इलाज उपलब्ध होने के साथ भी डायबिटिक फुट अल्सर (DFU) रोग का परिणाम अच्छा नहीं है। आयुर्वेद में इस तरह के व्रण को दुष्ट व्रण माना गया है एवं उनका उपचार विविध साधनों द्वारा किया जाता है; जैसे की मुख से दवा खाना, रक्त-मोक्षण, व्रण का शोधन करना आदि है। प्रस्तुत प्रकरण एक 49 वर्ष से अधिक आयु के पुरुष रोगी से संबंधित है जिसके बाएं पांव की 5 वीं अंगुली व साथ का वेब स्थान डायबिटिक फुट अल्सर से ग्रसित था तथा उसके बाएं पांव की पहली चार अंगलियाँ पहले से ही अंगच्छेदन द्वारा निकाल दी गई थी। रोगी मधुमेह के प्रकार II और उच्च रक्तचाप के रोग से व्यथित था पर दोनों रोग की स्थितियों के लिए दवा ले रहा था। उसे केवल आयुर्वेदिक दवा ही दी गई थी ताकि ब्लड ग्लूकोज और उच्च रक्तचाप पर नियंत्रण किया जा सके। व्रण का उपचार आयुर्वेदिक चिकित्सा सूत्रों द्वारा किया गया। इससे व्रण का पूरा विरोहण हो गया।