

MANAGEMENT OF DIABETIC FOOT GANGRENE IN AYURVEDA – A CASE STUDY

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Abstract

Diabetic foot ulcer is one of the most significant and devastating complication of diabetes. Diabetic ulcer is usually caused by a poor glycemic control, underlying neuropathy, peripheral vascular disease or poor foot care. In India, diabetes-related foot ulcer carries a life time risk of 15% of all persons with diabetes. In Ayurveda this can be considered as Dusta vrana. The field of wound care is currently suffering from problems with antibiotic-resistant pathogens. There is a scope for Ayurveda to help these patients. However, specific protocol and cost-effective therapies need to be developed urgently to halt this catastrophic disease. This present report describes a case of diabetic foot gangrene diagnosed as per clinical features and managed successfully following vrana chikitsa principles mentioned in Ayurveda. Clinical features were assessed before and after treatment. Results showed that Ayurveda treatment methods have helped in dissolving the necrotic tissue and promote wound healing. Obtained results and observations have shown very encouraging outcomes and clearly suggest that diabetic foot gangrene can be managed successfully by Ayurveda.

Keywords: Diabetic foot ulcer; Diabetic foot gangrene; Dusta vrana.

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INTRODUCTION

As the incidence of diabetes mellitus is increasing globally, increase in its complication is also on rise. Diabetes related foot ulcers carry a lifetime risk of 15% of all persons with diabetes.^[1] It is usually the result of poor glycemic control, underlying neuropathy, peripheral vascular disease or poor foot care.^[2] A complication of necrosis, gangrene can arise because of critically insufficient blood supply. The general line of treatment in modern medicine includes antibiotics to treat infections, wound debridement, topical application and amputation is the last option in case of gangrene and complicated wounds. In Ayurveda, this can be considered as dusta vrana with kotha.^[3] Sushruta has described 60 measures (Shasti upakrama) for the comprehensive management of Vrana (wound), which includes local as well as the systematic use of different drugs and treatment modalities.^[4] The present case is diabetic foot gangrene which was managed following the vrana chikitsa principles mentioned in Ayurveda.

CASE REPORT

This is a case of sixty year old male [OPD No.: 37242], a diabetic patient who came to Government Ayurveda Medical College and Hospital (GAMC&H), Nagercoil with the chief complaint of non-healing ulcer over second toe of the right leg since 3 months. Maggots present with foul smelling pus discharge and swollen blackish discoloration of second toe. Associated with general weakness and numbness of the foot.

History of present illness

Patient was apparently normal before 3 months. One day he got hit on right second toe and had a lacerated wound. Gradually, the wound got severe inspite of regular treatment. Since one week, blackish discoloration

developed in the second toe and was diagnosed as diabetic foot gangrene and amputation was suggested in Allopathy hospital. Patient refused & approached a local traditional vaidya. After that maggots developed in the wound. So he came to GAMC&H, Nagercoil for Ayurvedic management.

Past history

He was a known case of diabetes mellitus and was on insulin and oral hypoglycemic medications since 10 years. He was also a known case of hypertension and coronary artery disease (CAD) and was under medications.

Personal history

Appetite: good
Diet: mixed
Bowel: Regular, Once a day
Sleep: Disturbed
Addiction: Nil
Occupation: Retired Government officer

Vitals

B.P: 130/80 mm Hg
Pulse: 76/min
Respiratory rate: 18 / min
Temperature: 98.6 F

Local examination of the wound

Site: over second right toe
Size: length - 5 cm width -3cm depth - 1cm
Number:1
Shape: irregular
Margin: inflamed
Edge: undermined
Floor: Maggot infestation present, covered with slough and unhealthy granulation tissue.
Discharge: pus, foul smelling
Surrounding skin: blackish in colour, oedema (+), warmth (+)

Regional lymph node: not palpable.

Investigations

FBS: 179 mg/dl
Hb%: 11 gm%
ESR: 65 mm/hr
TC: 6900 cells/cu.mm

X-ray Right foot AP & Oblique view:

Mild sclerotic changes in distal end of second metatarsal bone.

Diagnosis

Dusta vrana (Diabetic foot gangrene) Grade-IV Wagner's classification for DFU

Treatment protocol

Based on need, the treatment plan was performed Chedana (excision), Bhedana (incision), Lekhana (debridement), Aharana (extraction), Eshana (probing), Shodhana (purification) and Ropana (healing) measures from Susruta's 60 upakarmas for vrana. The details of procedure done were summarised in Table 1.

Systemic treatment

Stage 1: Jantughna (control of infection) and shodhana, control prameha .

Stage 2: Vrana ropana and Rasayanam

In stage 1, Aragwadhadhi kasayam,^[5] Sudarsana tablet,^[6] Guggulu pancapala churna,^[7] Nishamalaki tablet,^[8] Gandhaka rasayana tablet^[9] were used .

In stage 2, Mahatikthaka kasayam,^[10] Triphala guggulu^[11] and Shiva gulika^[12] were used internally.

Outcome and follow-up

The wound healed completely. Ninety eight percent reduction of wound in 40 days. (Figure 1) Patient was followed once in 15 days for 3 months. There was no complaint of pain and discharge.

DISCUSSION

In Ayurveda, diabetic foot gangrene can be considered as kotha under dusta vrana. The management of vrana (wound / ulcer) was described in detail by Susruta under shasti upakarmas (sixty procedures). Acharya Susruta has advised to follow Dushtavrana Chikitsa for Meha, Kushta Vrana in Chikitsasthana sadyovrana Adhyaya.^[13]

Based on that, a two-staged treatment schedule was prepared and applied in this case. The first stage aimed at vrana shodhana and shareera shodhana because vrana ropana (wound healing) will not occur without proper shodhana (Purification). Stage 2 aimed at vrana ropana and rasayana. The following upakrama was applied in this case based on the condition.

Chedana karma

Wound debridement and disarticulation of gangrenous second toe.

Eshana and Bhedana

Probing done and incision made over plantar aspect to facilitate pus drainage.

Lekhana: debridement

Aharana: removal of maggots

Vrana shodhana

Vrana prakshalanam with Triphala kashayam and Jathyadhi ghrtam application.

Table 1: Timeline of events

Date	Findings	Interventions	Outcome
17.12.2019 to 20.12.2019	Patient diagnosed as dusta vrana, Gangrene of Right 2 nd toe with Maggots	Around 50 maggots removed, Wound debridement and disarticulation of gangrenous right 2 nd toe, Vrana Prakshalanam with triphala kashayam, Gauze dipped in turpentine oil placed over wound and bandaged Insulin with constant sugar monitoring Internal Ayurveda Medicines Aragwadadhi kashayam 50 ml b.i.d. Sudarsana tablet 2-0-2 Guggulu panchapala choornam 3 g b.i.d. Gandaka Rasayana tablet 1-0-1	No maggots found from day 3 onwards
21.12.2019 to 24.12.2019	Swelling, Pain, discoloration in the foot with copious pus discharge, Deep wound X ray foot showed mild sclerotic changes in distal end of second metatarsal bone.	Wound over the second toe probed and an incision is made over plantar aspect of Right foot to facilitate pus drainage. Jathyadhi ghrta varti inserted into the tract and bandaged Vrana Prakshalanam, Insulin and Ayurveda medicines continued	Mild improvement in swelling and pain
25.12.2019 to 17.01.2020	Nadi vrana (Sinus ulcer)with pus discharge	Vrana prakshalanam with panchavalkala kashayam Wound dressing with Jathyadhi ghrta Mahatiktakam kashayam 50 ml bid Guggulu panchapala choornam 3 g bid Mahatiktakam kashayam 50 ml bid	No pus discharge Swelling in foot reduced
18.01.2020 to 26.01.2020	Wound healthy	Triphala guggulu 2-0-2 Shiva gulika 1-0-1	Patient discharged with healed wound

Vrana ropana: Vrana prakshalanam with Panchavalkala kashayam and Jathyadhi ghrtam application.

Vrana prakshalanam removes the devitalised tissue which can be a source of endotoxin that inhibits fibroblast and keratinocyte migration into wound. Application of jathyadhi ghrtam has vrana shodhana and vrana ropana.^[14] It provides a moist wound healing environment which prevents formation of scab, allowing epithelial cells to spread horizontally outwards through the thin layer of wound exudate to close the wound.

Internal medicine

Gandhaka rasayana tablet having jantughna property and Sudarsana tablet having jwaraghna property were used to control infection. Guggulu panchapala choornam having krmighna property and does shodhana and ropana of nadivrana.

Aragwadhadhi kashayam is vrana shodaka and pramehahara and it has potent antimicrobial properties.

Mahatiktakam kashayam having pitta samana and rakta prasadana property and triphala guggulu having vrana shodhana properties were used to promote vrana ropanam (wound healing). Shiva gulika which contains shilajitu acts as rasayana to correct the complications of prameha.

CONCLUSION

Diabetic foot gangrene is a frequent complication of diabetes mellitus. The present case diagnosed as dusta vrana (diabetic foot gangrene) and managed based on principles of Ayurveda showed complete wound healing without complications. The findings need to be confirmed and validated by following the same treatment protocol in more number of patients with Diabetic foot gangrene.

Figure 1: Management of diabetic foot gangrene in Ayurveda



A-wound on first day ; B- disarticulation of gangrenous toe ; C- deep wound with maggots ; D-removal of maggots ; E-probing and incision to drain pus ; F-wound with pus discharge ; G-wound after 30 days ; H-wound healthy ; I-completely healed wound .

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