

A Case Report on Management of Third Toe Gangrene by Amputation in a Diabetic Female

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Abstract

Background: 30% of all superficial mycoses and 50% of all nail conditions are caused by Onychomycosis. Diabetes mellitus, which is associated with a prevalence of Onychomycosis of 31.5% in these patients, is one of the most researched predisposing variables. Others resist conventional treatments and exhibit "polypharmacy," which increases the danger of drug interactions. **Case presentation:** We present a 53-year-old female admitted to a tertiary hospital with complaints of blackening of the left 3rd toe since one month; the patient recognize to be in good health one month back. When she experienced pain in left lower limb. Associated with discoloration of the 3rd toe of the left foot. Continuous pain aggravates on standing alone, and walking does not get relieved on resting. Now patient came to the hospital for further management. No complaints of nausea, vomiting, cough, and breathlessness; the patient had known complaints of diabetes mellitus type-2 on medicine Vildagliptin and Metformin, Dabaglifoizin 10 mg, metformin since five months, and hypertension on Metoprolol 5mg since five months. No history of angiography documents. Tab. Ecosprin 150 mg OD, Tab. Cliopidogrel 75 mg OD, Tab. Stiloz BD. Required investigations were done. Diagnosis of peripheral vascular disease with gangrene of left third toe with tinea pedis with nail Onychomycosis was made. Patient planned for amputation of the left third toe and avulsion of the great bilateral toe. The patient was operated on for the same. Post-operative proper antibiotics, analgesics, and nutrition support were given. The daily dressing was done. **Conclusion:** Now, the patient is stable. And being discharged with suture in situated to be reviewed in surgery opd for follow up and suture removal.

Keywords: Gangrene, left third toe, pain, amputation, diabetes mellitus.

INTRODUCTION

Diabetes results from an impairment in either insulin synthesis by the pancreas or its use. It ranks alongside tuberculosis, malaria, and acquired immune deficiency syndrome as one of the main causes of death worldwide. Over time, developing nations have seen a greater rise in diabetes prevalence than developed ones worldwide. Diabetes is linked to several complications and a lower quality of life. Some of the numerous consequences pose a risk to life. Foot issues are still a major concern among these.

The primary foot issues include foot ulceration, cellulitis, abscess, wet gangrene, dry gangrene, and necrotizing fasciitis, each of which has a distinct pathophysiological background. According to the World Health Organization, diabetic people have a higher risk of having a leg amputated than nondiabetics have.

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Amputation could result in a longer hospital stay, more deaths, and less rehabilitation¹.

One of the most prevalent nail infections, Onychomycosis, is becoming increasingly prevalent. Because fungus nail infections never tend to heal on their own, therapy is always necessary. Consequently, the condition falls under the primary domain of dermatologists.

In addition to being responsible for 50% of all nail disorders and 30% of all superficial mycoses, Onychomycosis affects 5.5% of the general population^{2, 3, and 4}. The prevalence is estimated to be around 10%, and in older persons, it is above 40%². Dermatophytes are the primary onychomycosis-causing organisms; however, non-dermatophyte moulds should be regarded as related or causal agents in those who do not respond to conventional therapeutics^{2,3}.

Such as peripheral vascular disease and immunodeficiency. Higher HbA1C levels have been positively correlated with nail thickness, increasing the normal subungual keratinization brought on by a fungus. Over 50% of all infections in diabetic patients are fungus-related. Compared to diabetic individuals without Onychomycosis (3.8%), those with the condition have a higher incidence of gangrene and foot ulcers (12.2%)⁴.

Onychomycosis is a concern for the development of the diabetic foot because it is linked to difficulties with nail removal, which can lead to patients hurting themselves and providing a path for bacterial agents [9]. In addition to having "polypharmacy," which poses a risk of pharmacological interactions in systemic management, or having contraindications for systemic administration, many of these patients exhibit resistance to standard therapeutics (in some cases related to incomplete prior treatments), making them candidates for topical therapy after culture⁵.

CASE PRESENTATION

A 53-year-old-female patient was admitted to Tertiary care hospital Wardha. With complaints of pain in the lower limb, blackening of left 3rd toe since one month; the patient recognized to be in good health one month back. When she experienced pain in left lower limb. Associated with discoloration of the 3rd toe of the left foot. Continuous pain aggravates on standing alone, and walking does not get relieved on resting. Now patient came to the hospital for further management. No complaints of nausea, vomiting, cough, and breathlessness; the patient had known complaints of diabetes mellitus type-2 on medicine Vildagliptin and Metformin, Dabaglifoizin 10 mg, metformin since five months, and hypertension on Metoprolol 5mg since five months. No any past history of angiography documents. Tab. Ecosprin 150 mg OD, Tab.Cliopidogrel 75 mg OD, Tab. Stiloz BD. Required investigations were done. Diagnosis of peripheral vascular disease with gangrene of left third toe with tinea pedis with nail Onychomycosis was made. Patient's Pulse rate: 68,

resp: 16, B.P: 100/60 mmHg. Temperature: febrile. All routine investigations were done, with the following findings: CBC investigations on cell counter with PS: 10.1% hemoglobin, 5.08 red blood cells, 11,600 white blood cells, total platelets, and 6.33. In the kidney function test, the values for urea were 80 mg/dl, creatinine was 3.5 mg/dl, sodium level was 150 mEq/l, and potassium was 5.5meq/l. Random blood sugar- 178 mg/dl. Other investigations are normal.

On local examination: It was found that blackening of the distal part of left 3rd toe no discharge/ slough demarcation line present cold clammy foot on discharge healthy suture line no gape no discharge bilateral great toenail bed healthy granulation tissue present no slough surrounding skin normal under aap parts painted and draped under anesthesia 'y-shaped incision' given over palmar aspect and 'u-shaped incision' given over dorsal aspect incision deepened in layers. Disarticulation of mid phalangeal joint done. Hemostasis achieved and confirmed closure done in layers, skin closure done with ehtilon 3-0, nail avulsion of right and left great toe done. Hemostasis was achieved and confirmed under AAP Vaseline dressing.

THERAPEUTIC INTERVENTION:

Tab Zifi CV BD, tab. Diclomol Sp BD, L/A Onabet, L/A DK gel BD, Tab. Itraconazole BD, Tab. Metoprolol OD, Tab.Dabaglifoizin Before breakfast. Tab. Vidagliptin. Before lunch before dinner, Tab. Limce OD, Tab.Supradyn OD, Syp.Cremaffin before bedtime. Follow up in medicine O.P.D. after 15 days or SOS. He improved with supportive therapy over a period of 3 weeks. Daily input output monitoring, BP monitoring, and RBS monitoring were done.

Post-operative proper antibiotics, analgesics, and nutrition support were given. The daily dressing was done. To be reviewed in surgery opd for follow up and suture removal. Advised given to the patient regarding high protein diet, avoid consumption of sugar. Watch for hypoglycemia, take medicine regularly, get adequate sleep, avoid tight clothing on bilateral lower limbs, and avoid barefoot walking. Now the patient is stable. And being discharged with suture in situated to be reviewed in surgery opd for follow up and suture removed after 15 days.

DISCUSSION:

A 53-year-old female patient was admitted to Tertiary care hospital Wardha with the complaints mentioned above. When the patient came to the hospital, that time her condition was poor, required investigations were done. Diagnosis of peripheral vascular disease with gangrene of left third toe with tinea pedis with nail Onychomycosis was made. Patient planned for amputation of the left third toe and avulsion of the great bilateral toe. The patient was operated on for the same. Post-operative proper antibiotics, analgesics, and nutrition support were given. The daily dressing was done. After investigation, treatment, and surgical management, his health condition was stable.⁶⁻¹⁶

If improperly treated, Onychomycosis in diabetics can be a life-threatening illness that threatens a limb. Onychomycosis was demonstrated to be a significant predictor of the occurrence of foot ulcers in a prospective analysis of 1285 diabetes patients. Diabetes patients with peripheral vascular disease and poor glycemic control are more likely to develop Onychomycosis.17-20

According to a study, subclinical atherosclerosis, the main cause of death in diabetic patients, is linked to Onychomycosis in people with diabetes. Due to the coexisting neuropathy, the enlarged, brittle nails that are typical of this infection have the potential to harm the nearby skin without being observed. Pressure ulcers can develop because of enlarged, dystrophic toenails because they raise pressure on the underlying toe, endangering its fragile blood supply. Trimming thicker toenails, it's possible to harm the nearby skin accidentally.20

Screening Project. Dermatophytes, yeasts, and fungus are the most frequent causes of it. Overgrown, thicker toenails may harm the surrounding skin if the patient cannot maintain proper foot cleanliness. Molds and bacteria may gather in the subungual debris typical of distal subungual Onychomycosis, potentially compromising the skin barrier. Fungal infections, particularly Onychomycosis (23%) and tinea pedis (22%) were the most often clinically diagnosed foot disorders in the whole group of patients who consulted a dermatologist. The underlying causes of infection severity may include low immunity, coexisting clinical problems, and metabolic disorders. Infections and damage to several organs are both become more likely by diabetes.20

CONCLUSION:

A -53-year-old female patient came to the tertiary care hospital with the complaint mentioned above. On admission patient's condition was poor, but after investigations, treatment, and surgical management, her condition improved. Patients with diabetes are more vulnerable to fungal growth than people without diabetes. Fluconazole- and ketoconazole-resistant *Candida* species are proliferating in the neighborhood at an alarming rate. To lessen the burden of disease, there is a need to raise knowledge in the community about fungal infection and its effects on health. Diabetes affects several organs' ability to fight off pathogens by increasing the chance of infection and increasing organ damage. Chronic diabetes mellitus and poor glycemic control result in several consequences, including micro- and macrovascular problems, diabetic foot ulcers, eye infections, nephritis, and nerve infections, which have a high morbidity and mortality rate.

A correct diagnosis based on thorough anamnesis, clinical symptoms, and identifying the pathogen fungus is necessary for a successful course of treatment. Histological analysis and dermatoscopy are essential in this situation. The algorithm's current form gives a short overview of the period

of treatment.

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