

# Frequency of Undiagnosed Diabetes Mellitus in patients with Onychomycosis

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## ABSTRACT

**Aim:** To determine the frequency of undiagnosed diabetes mellitus in patients with onychomycosis.

**Method:** This cross sectional study was conducted in Fatima Memorial Hospital Lahore, from June 2016 to December 2016. A total number of 45 patients were enrolled for the study ranging from the age of 20-70 years. After informed consent, all patients underwent drilling of nails to confirm the diagnosis of onychomycosis. Fasting blood glucose levels were taken from hospital laboratory.

**Results:** Out of 45 patients 17 patients (37.78%) were diagnosed as cases of diabetes mellitus while 28 patients (68.22%) did not show findings of morbidity. Out of these 17 patients, 5 patients (29.41%) belonged to 20-40 years age group while 12 patients (70.59%) were in the age group of 41-70 years. Out of these 17 patients, 10 patients (58.82%) were males while 7(41.18%) were females.

**Conclusion:** Frequency of undiagnosed diabetes mellitus is higher among patients with onychomycosis. So it is recommended that every patient who presents with onychomycosis should also be evaluated for diabetes mellitus.

**Keywords:** Diabetes mellitus, onychomycosis, drilling of nails

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## INTRODUCTION

Onychomycosis is an infection of nails which is caused by either dermatophytic fungi or non dermatophytic fungi or yeasts.<sup>1</sup> Onychomycosis comprises of 50% of all nail disorders and also 30% of all superficial cutaneous fungal infections. Dermatophytes are a major cause for onychomycosis. *Trichophyton* is the cause of 71% of all infections and *T. mentagrophytes* is responsible for another 20%.<sup>2,3</sup> Yeasts are held responsible for 5% of onychomycosis and the majority is caused by *Candida albicans*. Mycological examination by direct microscopy (KOH mounting) combined with culture is gold standard for diagnosis as it is convenient to the patient<sup>4</sup>.

In experience, there has an association between an onychomycosis and undetected diabetes mellitus. So, rationale of this study was to determine the frequency of undiagnosed diabetes mellitus in patients with onychomycosis so that management of patient can be initiated for a proper outcome of patient and less rate of complications.

The objective of the study was to determine the frequency of undiagnosed diabetes mellitus in patients with onychomycosis.

## METHODS

This cross-sectional study was conducted in Fatima Memorial Hospital Lahore from June 2016 to December 2016. A sample size of 45 patients was calculated. Inclusion criteria included clinically diagnosed cases of onychomycosis who visited dermatology OPD. Patients of both gender and ages between 20 to 70 years were included and patients with known H/O diabetes mellitus and immunosuppressive disorders, e.g., HIV, chronic renal failure, transplanted patients, and patients with neoplastic disorders were excluded.

After informed consent, all patients who fulfilled the inclusion criteria and were clinically diagnosed and microscopically confirmed as cases of onychomycosis of single or multiple nails were included in study. The patients were started with treatment of onychomycosis and their fasting blood glucose was measured by chemistry analyzer in hospital labs.

Their nail drilling from single or multiple nails was taken by Dermatology department in collaboration with microbiology department. The most severely affected nail was selected and a part of specimen was placed on glass slide with addition of 20% KOH solution. After about half an hour direct microscopy was done to confirm the diagnosis. Either spores or fungal hyphae were considered as presence of fungus and it confirmed the diagnosis.

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## RESULTS

There were 25 male and 20 female patients who were enrolled for study. Frequency of undiagnosed diabetes mellitus in patients with onychomycosis was found to be 37.78% percent while 28 patients (62.22%) did not show lab values of blood sugar to be consistent in diagnosis of diabetes mellitus. Stratification of age is shown in Table 2 where out of 17 cases of undiagnosed diabetes, 5 were between 20-40 years of age while 12 were in 41-70 years of age group.

Stratification of gender shows that out of 17 cases of undiagnosed diabetes mellitus, 10 were males and 7 were females as shown in Table 3.

Table 1 Frequency of undiagnosed diabetes mellitus in patients with onychomycosis (n=45)

Undiagnosed Diabetes	n
Yes	17(37.78%)
No	28 (62.22%)

Table 2: Stratification for age Undiagnosed Diabetes

Age (years)	Yes	No
20-40	5(29.41%)	12(70.59%)
41-70	12(70.59%)	5(29.41%)

Table 3: Stratification for gender Undiagnosed Diabetes

Gender	Yes	No
Male	10(58.82%)	7(41.18%)
Female	7(41.18%)	10(58.82%)

## DISCUSSION

Onychomycosis is the infection of nail with mentioned fungi and with some other rare species also<sup>4</sup>. Environmental and physical factors along with immuno-compromised conditions are important risk factors for the growth of fungi in nails and same goes with nails moisture and recurrent or regular manicure or pedicure. Some investigations show that incidence of onychomycosis is more in patients of diabetes mellitus<sup>4,5</sup>.

Diabetes mellitus is a multi system disorder leading to impaired cell mediated immunity and studies confirm that diabetes patients exhibit more cutaneous infections than non diabetic people. Loss of cell mediated immunity is also related with longevity of diabetes mellitus and poor glycemic control<sup>6,7,8</sup>. So patients with long standing diabetes

mellitus and with its poor control have more chances of onychomycosis that depicts its importance to diagnose infections in early stages<sup>8</sup>.

In our study 17 patients were diagnosed as previously undiagnosed cases of diabetes mellitus while other 28 had no signs of morbidity which shows a significant higher rate of diabetes mellitus. These study findings go in consistent with an Indian study about herpes zoster and undiagnosed diabetes mellitus where association was found to be significant, which again shows that diabetics are more prone to all microbiological infections.

## CONCLUSION

The frequency of undiagnosed diabetes mellitus is more in patients with onychomycosis. So, it should be a routine practice for our clinic that every patient of an onychomycosis should be screened out for diabetes mellitus. However, every setup should have surveillance to optimize the frequency of disease.

## REFERENCES

1. Verma S, Hefferman MP. Fungal diseases: onychomycosis. In: Wolff K, Goldsmith LA, Katz S et al., editors. Fitzpatrick's Dermatology in General Medicine. 7<sup>th</sup> edn. New York: McGraw-Hall Companies; 2008. pp. 1816-8
2. James WD, Berger TG, Elston DM, editors. Andrew's Diseases of Skin Clinical Dermatology. 10<sup>th</sup> ed. Philadelphia, USA: Elsevier; 2006. P. 305-6.
3. Gupta M, Sharma NL, Kanga AK et al. Onychomycosis: Clinicomycologic study of 130 patients from Himachal Pradesh, India. Indian J Dermatol Venereol Leprol. 2007;**73**:389-92.
4. American Diabetic Association. Standards of medical care in diabetes. Diabetes Care. 211;**34**:S11.
5. Nassaji-Zavareh M, Taheri R, Ghorbani R, Aminian M. Undiagnosed diabetes mellitus in patients with herpes zoster. Indian J Dermatol. 2008;**53**:119-21.
6. McDonald JR, Zeringue AL, Caplan L et al. Herpes zoster risk factors in a national cohort of veterans with rheumatoid arthritis. Clin Infect Dis. 2009;**48**:1364-71.
7. Das NK, Ghosh P, Das S et al. A Study on the etiological agent and clinicomycological correlation of finger nail onychomycosis in Eastern India. Indian J Dermatol. 2008;**53**:75-9.
8. Sayed FE, Ammourey A, Haybe RF, Dhaybi R. Onychomycosis in Lebanon: A mycological survey of 772 patients. Mycosis. 2006;**49**:216-9.