Determination of Clinical Patterns of Onychomycosis in Patients presenting with Nail Disorders to a Tertiary Care Hospital

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Abstract

Objective: To determine the clinical pattern of onychomycosis among patients of nail diseases at Faisalabad

Method: This cross-sectional survey was done over a period of six months, at Outpatient Department of Dermatology, Allied/ D.H.Q Hospitals, Faisalabad Medical University. 210 cases with clinical diagnosis of onychomycosis were included. Patients taking treatment for fungal infection were excluded. Detailed history and examination was done. Type of onychomycosis was noted. Co morbidities like diabetes, hypertension and immunosuppression (determined on history and medical record) were noted.

Results: A total of 210 patients were included with mean age 47.14±13.71 years. Males were 113 (53.81%) and females were 97 (46.19%). Distal lateral subungual onychomycosis (DLSO) was seen in 112 (53.33%), Total dystrophic onychomycosis (TDO) in 56 (26.67%), proximal subungual onychomycosis (PSO) in 27 (12.86%) and white superficial onychomycosis (WSO) in 15 (7.14%) patients.

Conclusion: It is seen that onychomycosis is a frequently seen nail disorder at a tertiary care setting. Distal lateral subungual onychomycosis was the most frequently encountered clinical pattern.

Keywords: Pattern, Onychomycosis, Nail disorders, Tertiary care hospital

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Introduction

Finger and toenails are frequently infected by dermatophytes and yeasts causing onychomycosis.[1] Increasing age, immunosuppression and repeated trauma contribute to more cases of onychomycosis presenting to health care settings.[2] Other contributing factors include increased sweating, swimming, diabetes, etc. It is not a life-threatening condition, however, it significantly impairs quality of life of sufferers.[3]

Onychomycosis is caused by dermatophytes, non-dermatophyte moulds (NDM) and yeasts.[4] Diseases that may mimic onychomycosis include inflammatory diseases like psoriasis, lupus erythematosus, lichen planus, bacterial paronychia and nail apparatus tumors.[5] KOH examination can provide immediate and accurate information in the diagnosis of onychomycosis.[6]

Predominantly observed patterns of onychomycosis are Distal or lateral subungual Onychomycosis (DLSO), which is the commonest pattern seen; Total dystrophic subungual Onychomycosis (TDO); Proximal Subungual Onychomycosis (PSO); Superficial white Onychomycosis (SWO).[7] White superficial onychomycosis (WSO) is characteristic in immunocompromised patients. Onychomycosis in diabetes generally indiactes complicated disease.[8]

Owing to latest therapeutic advances, prognosis of disease has significantly improved.[9] Therefore, it is expected that the frequencies of various patterns of onychomycosis have changed over time. There is no updated local data available regarding the frequency and clinical pattern of onychomycosis in our population.

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This study will provide data about the magnitude of the disease so that preventive steps can be taken to avoid or better manage the condition. Unfortunately, due to lack of resources mycological confirmation couldn't be attempted. Our data however, may help other researchers base their analyses of mycological species and drug resistance on pattern of disease presenting in patients of various ages and risk factors.

Materials and Methods

This cross-sectional survey was done at Dermatology unit, DHQ hospital Faisalabad from 15th January 2021 to 14th July 2021. Patients of both genders presenting with clinical diagnosis of onycomycosis, aged 18 to 80 years were included after taking written informed consent. Patients already taking treatment for fungal infections or having nail diseases that closely mimic onychomycosis (psoriasis, eczema) were excluded.

Detailed history and clinical examination was done. Type of onychomycosis was noted. Fungal scrapping was done to confirm diagnosis of onychomycosis in cases where diagnosis was not confirmed. Data was entered in predesigned proforma.

Data was entered and analysed using SPSS Vs 27. Mean and standard deviation were used to present quantitative variables. Qualitative variables were expressed as frequency and percentages. Role of effect modifiers like age, gender, diabetes, hypertension, immunosuppression and duration of disease were addressed through stratification of data. Post-stratification, results were analysed using student t-test. A p-value of ≤ 0.05 was considered significant.

Results

After taking written informed consent, 210 patients of onychomycosis were enrolled. Their ages ranged from 18 to 80 years with mean age of 47.14 ± 13.71 years. Majority of the patients (138/ 65.71%) were between 18 to 50 years of age as shown in Table 1. 113 patients (53.81%) were male and 97 (46.19%) were female with male to female ratio 1.25:1. Effect modifiers like age, gender, diabetes, hypertension, immunosuppression and duration of disease had statistically significant association with clinical patterns seen (Table 2).

In our study, clinical pattern of DLSO was observed in 112 (53.33%), TDO in 56 (26.67%), PSO in 27 (12.86%) and WSO in 15 (7.14%) patients (Fig 1).

Table 1: *Descriptive Demographic Data of Patients*

		Number of Patients	Percentage %
Age	18-50	138	65.71
	51-80	72	34.29
Gender	Female	97	46.19
	Male	113	53.81
Immunosuppression	Yes	101	48.10
	No	109	51.90
Contributing Factors	Yes	130	61.90
	No	80	38.10
Diabetes Mellites	Yes	103	49.05
	No	107	50.95
Hypertension	Yes	131	62.38
	No	79	37.62
Duration of Disease (months)	⩽6	145	69.05
	>6	65	30.95

Table 2: *Stratification of Clinical Pattern with Respect to Effect Modifiers*

		DLSO	TDO	PSO	WSO	p-value
Age	18-50	65	36	23	14	0.006
	51-80	47	20	04	01	
Gender	Male	57	31	21	09	0.011
	Female	55	25	06	11	
Duration	⩽6	78	29	25	13	0.001
	>6	34	27	02	02	
Diabetes Mellitus	Yes	47	30	12	14	0.002
	No	65	26	15	01	
Hypertension	Yes	80	28	19	09	0.001
	No	32	28	08	11	
Immuno-suppression	Yes	49	21	20	11	0.002
	No	63	35	07	04	

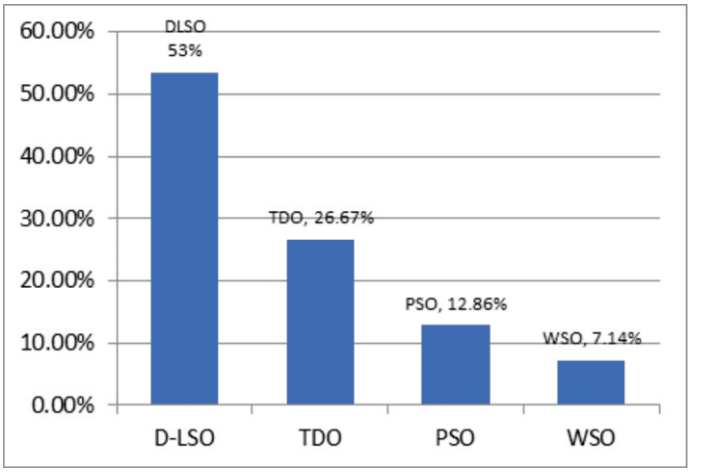

Fig 1: Frequency of various patterns of Onchomycosis

Discussion

In our study, DLSO was the commonest clinical pattern seen in 112 (53.33%) patients, followed by TDO in 56 (26.67%), PSO in 27 (12.86%) and WSO in 15 (7.14%) patients. Similar results have been reported in a number of studies.10-12 Ma Y et al. studied dermoscopic findings in onychomycosis in Chinese patients and found DLSO pattern in 59 (67.82%), TDO in 19 (21.83%), PSO in 6 (6.90%) and WSO in 3 (3.45%) patients.[10] Grover S observed various clinical patterns of onychomycosis in Indian population and found DLSO as the commonest pattern seen while WSO was least commonly seen. They too observed that the disease was commoner among younger population, probably because of being physically active and prone to trauma and infections. They seek medical advice earlier due to cosmetic reasons.[12,13]

Elderly men with diabetes were found to be particularly prone to the development of onychomycosis. It is not fully known whether this is due to decreased immunity or diabetes itself.[14] More involvement of male patients was also highlighted by Vijaya et al.[15] This can be attributed to outdoor activities, being more prone to trauma and sports activities. Most of the patients in our study had disease duration of less than 6 months. This is contrary to other studies,[12-14] probably because of cosmetically conscious young population in our part of the world.

Onychomycosis is a common nail disorder associated with significant cosmetic and physical disability due to pain, discoloration and brittleness involved. Due to slow growth of nails, treatment is also troublesome and prolonged, leading to further aggravation of misery of patients. With advancement in treatment strategies, clinical patterns of onychomycosis may vary over time. Therefore, knowledge of these patterns are of utmost importance especially in our part of the world where no such studies have been conducted on this topic. This will lead to improved management plans and predictability of treatment and may help us in further increasing our knowledge about the causative agents too. Our results will further help researchers to plan mycological analysis of causative fungi along with drug resistance analysis in susceptible population.

Conclusion

Onychomycosis is a frequently seen disease of nails caused by dermatophytes. Knowledge of its clinical pattern is very helpful in dealing with the disease properly. We found Distal lateral subungual onychomycosis as the commonest pattern seen while white superficial onychomycosis was the least common.

Conflict of interest *None*

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Authors Contribution

AS: Conceptualization of Project
AK: Data Collection
AS: Literature Search
SH: Statistical Analysis
MS, FA: Drafting, Revision
HT: Writing of Manuscript