International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2020): 7.803

# Disease Presentation and Progression of COVID Patients with Modified Tinea

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**Abstract:** ***Background: Dermatophytes causes superficial skin hair and nail infections, which is becoming epidemic in India even during the COVID19 pandemic period. Superficial dermatophytosis has evolved as a difficult to treat, chronic (>1year) extensive, recurrent, persistent, widespread recalcitrant infection and has emerged as a major public health problem in our country. Potent steroid molecules in the combination/OTC creams cause local immuno-suppression, barrier dysfunction and increase multiplication of the dermatophytes resulting in persistent infection. The term 'Steroid modified dermatophytosis' is used when the clinical morphology of dermatophytosis can be recognised in spite of application of topical corticosteroids. The term 'Tinea incognito' refers to the situation in which the clinical morphology is so altered that dermatophytosis is unrecognizable, due to the application of topical corticosteroid creams or use of OTC creams. Aim: disease presentation and progression of COVID patients with modified Tinea. Materials & Method: This is a clinico-epidemiology study of modified Tinea infections patients with received at the Dermatology OPD of Shadan Institute of Medical Sciences, Research Center & Teaching Hospital in the COVID 19 phase January 15th 2021-August 31st 2021 which were prevalent in the surrounding geographical district of Peeramcheru, Hyderabad, Telangana. Results: modified Tinea is more common in males with age group of 35-40 yrs, low socioeconomic status, Pseudoimbricata as common presentation, Tinea Cruris & Corporis most common type and OTC as most common aggrevator. Conclusion: In a time when India was fighting Mucormycoiss/Aspergilosis /Candidiasis it was due to given circumstances it became even harder to treat dermatophytosis, which is still an ongoing predicament.***

**Keywords:** COVID, Tinea incognito Pseudoimbricata, over counter topical's, dermatophytes, extensive, recurrent, recalcitrant, persistent

## 1. Introduction

Dermatophytosis includes infection of skin and its appendages by dermatophyte group of fungi encompassing Trichophyton sp., Microsporum sp. And Epidermophyton sp. [1]Panda et al., [2] have defined recurrent dermatophytosis as "cutaneous dermatophytosis in which the infection reoccurred within 6 weeks of stopping the adequate antifungal treatment with at least 2 such episodes in last 6 months. The dermatophytic infections are reported commonly worldwide mostly in the modified form due to application of various topical creams in the form of extensive, recurrent, recalcitrant, psuedoimbricata involving all the family members and persisting for years. The epidemiology keeps on changing due to socioeconomic status, incorrect, incomplete mismanaged treatment by primary medical practitioners. With unprecedented onset of COVID pandemic, people were left with little or no access to medical professional in the concerned area of disease this led to overuse of medications creating immediate relief of skin lesion and reuse of same or other chemicals with re-occurrence of the symptoms, with less idea of its outcome

## 2. Aim

Study of COVID 19 patients with Tinea in Incognito, Pseudoimbricata, various atypical presentation and progression with topical over counter drugs/OTC creams causing poor treatment response and resolution. Detailed epidemiology, clinical parameters, treatment history and other host factors were assessed. The cases may be relapse, without adequate fungal clearance due to missed sources of infection such as an unnoticed nail or vellus hair involvement; while re-infection from untreated family members or inadequate hygiene (infected clothing and fomites) [3] Some authors have proposed antifungal drug resistance [3] or modifiable host factors viz. CARD9 mutation resulting in defective antifungal response [4] or biofilm formation (for both T. rubrum and T. mentagrophytes) [5] over-the-counter (OTC) preparations in India contain low concentrations of steroids (absorption is further reduced during penetration through the skin layers) which stimulate fungal metabolism; however higher steroid concentrations may inhibit fungal metabolism by their cytostatic properties. [3] All those cases having received treatment with Dermatophytosis altered by topical corticosteroid preparations are called "steroid-modified tinea" or "tinea incognito", a working definition being "patients with application of topical steroid for a minimum duration of six-weeks (alone or in combination with other drugs) ". [6]

## 3. Methodology

All study participants (n = 100) were subjected to detailed clinical history concerning socio-demographic details, duration of disease, family history, use and sharing of fomites like towels, soaps, clothing and treatment received including use of over-the-counter (OTC) products.

Majority of our patients (82%, 82/100) presented with involvement of multiple sites. Tinea corporis et cruris was the commonest clinical presentation (57%, 57/100) followed by tinea manum (28%, 28/100), tinea facei (25%, 25/100) and t. pedis (6%, 6/100). Atypical presentations have been reported by Vineetha et al., [7] and Verma et al., [8] along with eczematous lesions and genital involvement.

## 4. Materials & Method

we have conducted a prospective observational study, and report the cutaneous manifestations/alterations of disease

with application of various topical corticosteroids and over the counter drugs from 15th January 2021 to31st August2021 [71/2months].

**Inclusion Criteria**

All middle (15-40yrs) age group who are COVID 19 positive (RTPCR +ve) and on treatment for Tinea (any topicals).
Associated co-morbid factors.
Consent given patients.

**Exclusion Criteria**

Pediatric age group
Pregnant and Lactating
Non compliant patients
Patients with Tinea Versicolor, Tinea Capitis, Onychomycosis
Patients with Candidia and other deep fungal infections

**Observations**

Out of 100 patients 53 were male and 47 female, 44 patients were of semi urban and 56 patients from rural areas.
Age descriptors 15 – 30yrs 27 patients

30 – 35yrs 33 patients

35-40yrs 40 patients
Socioeconomic status low 75; mid 25 patients

Topical steroid abuse is more over other OTC creams.

Non clinicians are seen as larger group in discrepant use of drugs to cause more harm to the patients with clinical therapeutic management for the dermatologist.

Pseudoimbricata is the commonest of the modified Tinea variety.

T Cruris and Corporis is seen as the leading type with family contagion.

| OTC Creams | No of Patients | Advised By | Clinical Types | Clinical Site | Family Contagion |
|---|---|---|---|---|---|
| Lobate GM | 19 | Non Clinical | Lichenoid (E) | T. Cor. + T. Cru. | + |
| Panderm B | 22 | Ayur | Pseudoimbricata | T. Cor + T Cru T. Fac. | ++ |
| Dermifive | 17 | GP | hyperkarototic (E) | T. Cru + T. Manum. | + |
| Candid total | 6 | Gynae | Erythamatous | T. Cru. | + |
| Surfaz SN | 8 | Pharmacy | Lichenoid | T. Cor. + T. Cru. | - |
| Zalim | 3 | Ayur | Non Scaly erythema | T. Fac. | - |
| Patanjal | 5 | Ayur | Indurated Plaque | T. Cor. + T. Cru. | + |
| Itchguard + | 6 | Non Clinical | Eczematous | T. Ped. + T. Cor. | + |
| Tadheen | 3 | RMP | Erythematous | T. Cor. + T. Cru. | ++ |
| Candid B | 11 | Gynae | Pseudoimbricata | T. Manum. | - |

(T. Cor – Corporis; T Cru – Cruris; T. Fac-Facei; T. Ped-Pediculosis; (E) - extensive)
As the human-human transmitted disease, corona virus disease 2019 caused by severe acute respiratory syndrome coronavirus2 (SARS-COV-2) has been an emergency global public health events

Images (upper left) Tinea incoginato; (upper right) Hyperkerototic Tinea Corporis
(Middle left) Tinea Pedis (inflammatory); (middle right) Tinea Manum Eczematous
(3rd row left) Tinea facei diffuse erythematous; (3rd row right) extensive modified Tinea corporis
(Lower right) Tinea Pseudoimbricata

## 5. Discussion

Modified tinea in COVID patients is progressing due to the antigen mediated host specific inflammatory response due to activation of TH1 & TH17 mediated, cell mediated immunity, increasing IgE & IgG [9] leading to alteration in typical appearance of Tinea (well defined annular plaque with scaling and central clearing) in the form of widespread bizarre shaped lesion due to OTC creams [10]. This superficial fungal infection is becoming chronic recalcitrant & resistant to the treatment due to rebound phenomenon, the chief abuse of topical corticosteroids is due to rapidity of symptomatic relief indefinite no of refills of a single medication from the pharmacist during this COVID phase.

A study of 58 patients of tinea facei was conducted out of whom 25 (43.1%) patients presented with complaints of photosensitivity and in 2 patients' lesions resembled discoid lupus erythematosus. They were all applying topical steroid [11] Starace et al5 reported a case of a 17-yearold male with pustular psoriasis of nail bed of toe, treated with topical steroids and vitamin D3 derivative, which gave rise to a tinea incognito on dorsum of foot. [12]

Immune-mediated phenomenon called "tinea pseudoimbricata" is a particular type of tinea incognito which has been described as "rings within the ring" and "double-edged tinea" appearance. [13] Trichophyton mentagrophytes, instead of Trichophyton concentricum, is usually isolated from these lesions.

Rosen et al suggested that the steroid component may inhibit the effectiveness of the antifungal component when the latter has a limited or only fungistatic efficacy. [15]

Recently, there have been some reports of extensive, atypical chronic and recalcitrant dermatophytosis from West Bengal, Gujarat and Tamil Nadu, Sikkim, Odisha, Chandigarh, and Rajasthan.

The country's Drug Technical Advisory Board banned 328 FDC drugs on September 13, 2018, including skin care cream PANDERM containing clobetasol propionate, terbinafine, ofloxacin and ornidazole, as there is no therapeutic justification for the ingredient of this drug and banned it in public interest.

## 6. Conclusion

This study is to assimilate the source of modified Tinea

epidemic in this COVID era due misdiagnosis and mistreated leading to more contagious and difficult to cure with topical treatment protocols after the use OTC drugs. Dermatophytosis has become and can be proclaimed as most common infectious disease in these geographical locations (with respect to socioeconomic status, COVID and OTC's).

Tinea incognito is like an 'epidemic within an epidemic [16] They are also rampantly prescribed by family physicians, practitioners of alternate medicine and chemist, considering TCS as a "panacea" or "cure-all drug [17]".

Persistence of fungus is responsible for contiguous spread, facilitating intrafamilial cases. High index of suspicion and careful enquiry about use of such medications can clinch the diagnosis of tinea incognito. [18]

Potent topical steroids can also increase the numbers of hyphae present on the surface of the skin in fungal infections and change the appearance of the lesions. Self-medication and prolonged use is also very common. [19]

Dermatologist should take into consideration the used OTC creams other than topical corticosteroids before treatment comencement. Thanks to IADVL task force against Recalcitrant Tinea (ITART) started in January 2017 and doing a great job in reducing the burden of dermatophysis in India [20]

Declaration of patients with consent taken.

Financial Status and Sponsorship: Nil

Conflict of Interest: Nil

## 7. Limitations

Small sample size of study cannot be taken as predictor of disease progression in large group or as model for larger geographic location; lack of specificity as to the location and type of fungal infections involved; and failure to link immunosuppression specifically to these superficial fungal infections.

No previous similar/specific study could be found in the archives with reference to COVID prevelance, Tinea modification and OTC's.

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