Content available at: https://www.ipinnovative.com/open-access-journals

IP Indian Journal of Clinical and Experimental Dermatology

Journal homepage: www.ijced.org/

Original Research Article

Clinico-epidemiological study and microbiological correlation of tinea incognito at a tertiary care hospital

Monisha K[1,*], Jagannath Kumar V[2]

[1]*Dept. of Dermatology & Venerology, East Point Medical College, Bengaluru, Karnataka, India*
[2]*Dept. of Dermatology & Venerology, SS Institute of Medical Sciences & Research Center, Davangere, Karnataka, India*

ARTICLE INFO

Article history:
Received 28-01-2021
Accepted 11-06-2021
Available online 04-09-2021

Keywords:
Tinea incognito
Dermatophyte
Tinea mentagrophytes
Corticosteroids
KOH mount

ABSTRACT

Introduction: Tinea incognito also known as steroid-modified tinea are dermatophytic infections modified by the use of topical or systemic corticosteroids. Dermatophytic infection being very common and very simple to diagnose, is a diagnostic dilemma due to steroid abuse. Hence making a simple curable infection into a chronic persistent dermatological condition. As a treating doctor it's important to recognize and educate the patients regarding the tinea infections and steroid abuse.

Objective: To study the various morphological presentations, epidemiology and etiological agent of tinea incognito.

Materials and Methods: An observational study was performed with 100 cases from 2017 to 2019 in the department of Dermatology & Venerology, SS Institute of Medical Sciences and Research, Davangere, Karnataka, India. The baseline data, thorough general physical, local, and systemic examination were done with reference to clinical features of tinea incognito. Skin scraping were collected and subjected to potassium hydroxide (KOH) preparation. The part of the sample was inoculated into Sabouraud's Dextrose Agar (SDA) media for fungal culture. Later the fungus was identified by standard techniques.

Results: The mean age of study population was 32.83 years. The males outnumbered females in our study. Almost 29% cases remain asymptomatic followed by 34% itching and 37% burning sensation. The source of drug responsible for tinea incognito were highly suggested by friends (29%) with the combination use of drugs account for 35% of study population. 77% cases showed erythema followed by 48% of hypopigmentation. The scraping of lesion showed positive KOH mount in 71% and T.mentagrophytes were the most common dermatophyte grown in SDA medium.

Conclusion: Misuse of steroid formulations in dermatophytic infections may lead to adverse effect as well as chronicity. Awareness of this problem is needed for prevention of steroid modified dermatophytosis, which is a rising menace.

1. Introduction

Tinea incognito also known as steroid-modified tinea are dermatophytic infections modified by the use of topical or systemic corticosteroids prescribed for a pre-existing pathology. This term can also include dermatophytic infections modified by the use of immunomodulators such as calcineurin inhibitors.[1]

Dermatophytes metabolize the dead keratin and evokes an inflammatory response, this response may be suppressed by the use of immunosuppressants such as corticosteroids. This results in a varied morphological presentation of the classical dermatophytic infections. Tinea incognito lesions have a less raised margin and usually scaling is absent or minimal. They present with extensive involvement, pruritis,

* *Corresponding author*.
E-mail address: drmonishak@gmail.com (Monisha K).

https://doi.org/10.18231/j.ijced.2021.040

erythematous papular or pustular lesions, mimicking other dermatological conditions.[2]

Dermatophytic infection being very common and very simple to diagnose is a diagnostic dilemma due to steroid abuse. Hence making a simple curable infection into a chronic persistent dermatological condition. As a treating doctor it's important to recognize and educate the patients regarding the tinea infections and steroid abuse. This study is being done in our institution, SSIMS & RC, Davangere to study the various morphological presentations, epidemiology and etiological agent of tinea incognito.

2. Materials and Methods

With a level IV evidence, an observational study was performed from 2017 to 2019 in the department of Dermatology & Venerology, SS Institute of Medical Sciences and Research, Davangere, Karnataka, India. The cases for this study were recruited by convenient sampling technique. A group of about 100 patients with clinical features suggestive of tinea incognito belonging to both the sexes were included in the study after taking their consent.

In each case, the baseline data including age, gender, were collected and thorough general physical, local, and systemic examination were done with reference to clinical features of tinea incognito. Skin scrapings were collected from the lesion under aseptic precaution. All the scrapings were subjected to potassium hydroxide (KOH) preparation. The part of the sample was inoculated into Sabouraud's Dextrose Agar (SDA) media for fungal culture. Later the fungus was identified by standard techniques.

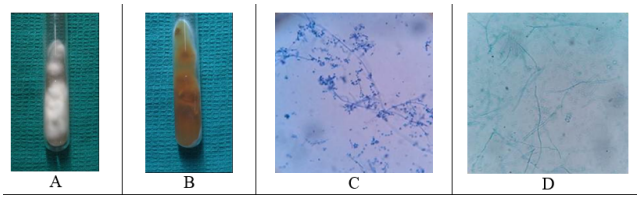


Fig. 1: Clinical images of A & B: White cottony colonies with raised central tufts and yellowish brown reverse; C: Sphericalmicroconidia in cluster and D: spiral hyphae along with spherical microconidia suggestive of Trichophyton mentagrophytes

3. Results

A total of 100 patients with clinical features suggestive of tinea incognito were taken up for study and subjected for statistical analysis. The descriptive statistics were reported as mean (SD) for continuous variables, frequencies (percentage) for categorical variables. Data were evaluated with IBM SPSS Statistics for Windows, Version 24.0, IBM Corp, Chicago, IL.

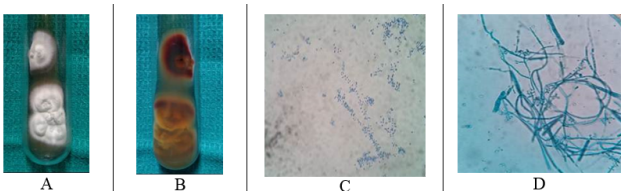


Fig. 2: Clinical images of A & B:white granular colonies with central foldings and deep red reverse; C: Tear shaped Microconidia, arranged along the sides of hyphae showing birds on the fence appearance and D: smooth thin walled multiseptate cylindrical macroconidia along with pyriform microconidia suggestive of Trichophyton rubrum

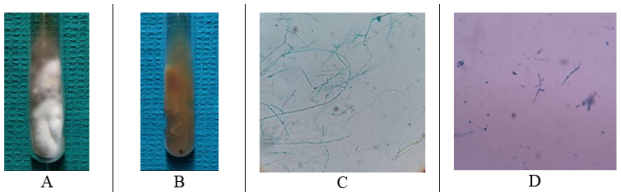


Fig. 3: Clinical images of A & B: white powdery colonies with a central fold with brown reverse; C: Showing intercalary chlamydoconidia and D: Showing balloon microconidia suggestive of Trichophyton tonsurans

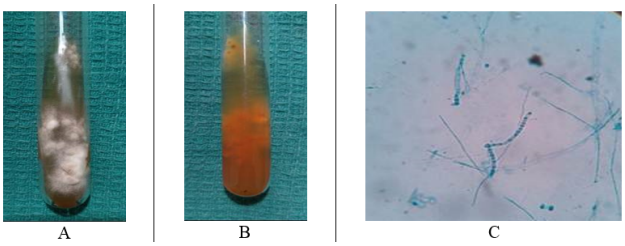
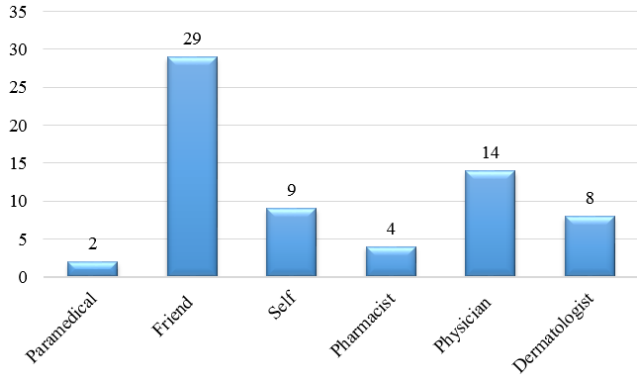


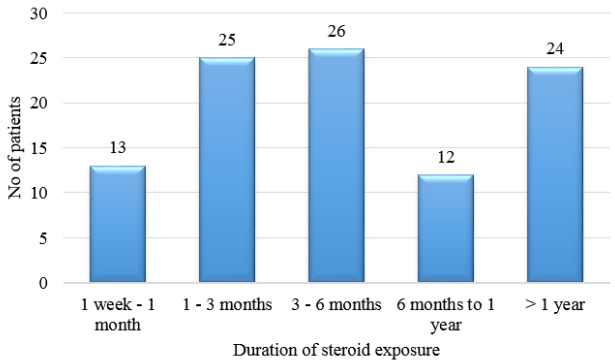
Fig. 4: Clinical images of A & B:Small button/disc shaped colonies with yellowish brown reverse; C: showing chains of chlamydoconidia - chain of pearl appearance suggestive of Trichophyton verrucosum

Out of 100 patients in our study, 58% of population belong to 20 to 40 years of age. The mean age of study population was 32.83 years. The males (n=58, 58%) outnumbered females (n=42, 42%) in our study. According to modified Kuppuswamy scale, the middle class strata population were highest of upto 57% (n=57) followed by high class 43% (n=43).

Almost 29% cases remain asymptomatic followed by 34% itching and 37% burning sensation. Diabetes (20%) remain highest among the study population in co-morbid illness. The source of drug responsible for tinea incognito were highly suggested by friends (29%) followed by physician (14%) (as shown in Graph 1). The duration of steroid usage among the study population were mentioned in Graph 2 .



Graph 1: Source of drug responsible for tinea incognito

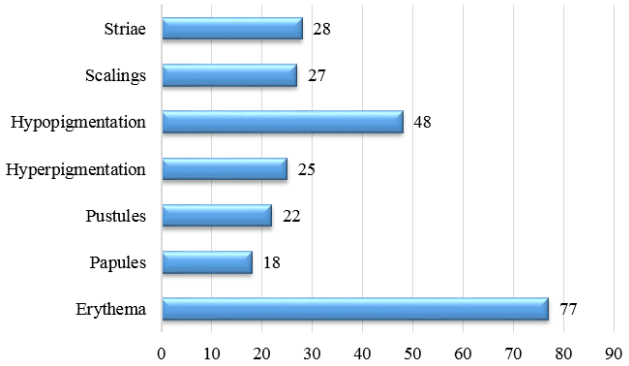


Graph 2: Duration of steroid exposure among study population

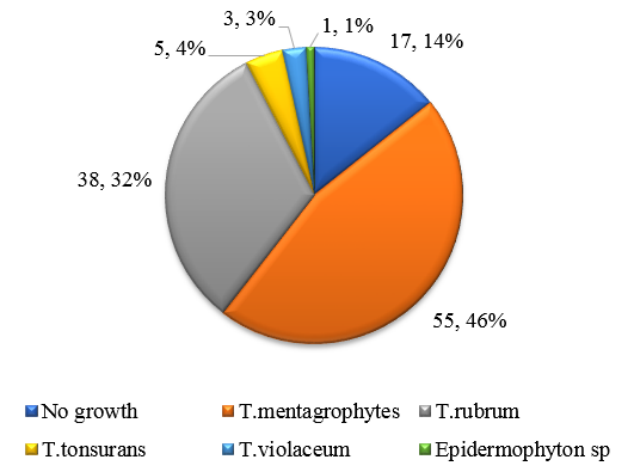
Out of the steroids and creams used in our study, the combination use of drugs account for 35% of population, clobetasole propionate in 31%, clobetasole propionate with salicylic acid in 19%, betamethasone valerate in 10% and mometasone in 5% of population. Among our study population, 77% cases showed erythema followed by 48% of hypopigmentation (as shown in Graph 3). The scraping of lesion showed positive KOH mount in 71% and negative KOH mount in 29%. The maximum cases shown growth of T.mentagrophytes (n=55, 46%) in SDA media is shown in Graph 4.

4. Discussion

The term tinea incognito was originally described by Ive and Marks in the year 1968 for the atypical dermatophytic infections with prior use of topical or systemic corticosteroids.[3] Tinea incognito (TI) is defined as tinea modified by the improper use of systemic or topical corticosteroids. As the use of topical corticosteroids has been increasing gradually in many dermatologic diseases, the number of cases of modified tinea has also increased.[4–6] We propose that tinea incognito (certain dermatophytosis) have lost their clinical manifestation because of irrational



Graph 3: Clinical findings in our study population



Graph 4: Distribution of growth of dermatophytes in SDA media

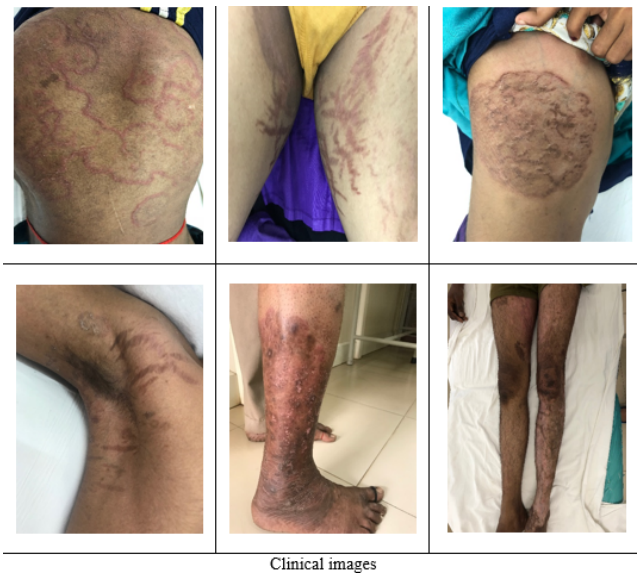


Fig. 5: Clinical Image

use of systemic/topical corticosteroids.[7] It is been suggested that the use of corticosteroids decreases the fungus-induced local inflammation, and this may allow the fungus to grow slowly with less erythema or scaling causing a "modification" of the typical manifestation of tinea.[5–7]

In our observational study done in the medical college setup, we encountered males (58%) outnumbered females (42%) with middle class strata (57%) being affected the most among study population. The presenting complaints were itching and burning sensation in the involved areas of the body. The co-morbid illness associated among our study population were diabetes being the highest followed by hypertension and IHD. Kim et al stated female preponderance with face as the most common site of predilection for TI presentation.[8]

The source of corticosteroids misuse among our study population were suggested by friends (29%), physicians (14%) and dermatologists (8%). Kim et al stated that dermatologists contributed 40% of TI. In our study, the combination use of drugs account for 35% of population followed by clobetasole propionate in 31% of study population.[8] Ansar et al. found that 64.3% of their patients were treated at home by themselves, 21.4% by general physicians, and 14.3% by dermatologists.[9] Mahar S et al. in India, found the most common reason for steroid abuse was fungal infections (38%). They also found that betamethasone valerate (72.8%) was the most commonly used topical corticosteroids.[10]

In our study, the clinical manifestation of erythema topped in 77% of population followed by hypopigmentation in 48% of study population. A few studies reported that the clinical features of TI were variable such as eczema-like, psoriasis-like and lupus erythematosus-like lesions.[9,11,12]

The scarping of lesion under KOH mount revealed 71% positivity for dermatophytosis. Among all cases, Tinea mentagrophytes (46%) were grown in SDA agar culture followed by Tinea rubrum (32%). Various studies confirmed that Trichophyton rubrum was the most frequently identified dermatophyte among TI.[13–17] Dutta B et al. in their prospective observational study of 100 patients conducted in India, found that Tricophyton (63%) was most common species isolated on culture. Tricophyton rubrum was the most common followed by Tricophyton mentagrophytes, other species like Tricophyton tonsurans, Epidermophyton floccosum and Microsporum canis were also isolated. This study also states that in majority of the cases pharmacists were responsible for prescribing medications.[18]

5. Conclusion

The steroid misuse is the major rising epidemic spread of superficial fungal infections across the country. More awareness regarding adverse effects of steroids in fungal infections is needed among doctors, paramedics and the general population. The production and marketing of irrational topical formulations containing a combination of steroid and antifungal needs to regulated. There is a need to educate community and medical professional that topical steroids are also dangerous, have serious side effects and judicious as well as rational use is anticipated to prevent tinea incognito.

6. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

7. Source of Funding

None.

References

1. Hay R, Ashbee H. Fungal Infections. In: Griffiths C, Barker J, Bleiker T, Chalmers R, Creamer D, editors. Rook's textbook of dermatology. 9th Edn. Edinburgh: Wiley Blackwell; 2016. p. 32–50.
2. Arenas R, Moreno-Coutino G, L V, Welsh O. Tinea incognito. *Clin Dermatol*. 2010;28(2):137–9. doi:10.1016/j.clindermatol.2009.12.011.
3. Ive FA, Marks R, Tinea. Tinea incognito. *Br Med J*. 1968;3(5611):149–52. doi:10.1136/bmj.3.5611.149.
4. Wollina U, Hansel G, Koch A, Abdel-Naser M. Topical pimecrolimus for skin disease other than atopic dermatitis. *Expert Opin Pharmacother*. 2006;7(14):1967–75. doi:10.1517/14656566.7.14.1967.
5. Crawford KM, Bostrom P, Russ B, Boyd J. Pimecrolimus-induced tinea incognito. *Skinmed*. 2004;3(6):352–3. doi:10.1111/j.1540-9740.2004.03796.x.
6. Siddaiah N, Erickson Q, Miller G, Elston DM. Tacrolimus-induced tinea incognito. *Cutis*. 2004;73(4):237–8.
7. Boz JD, Crespo V, Rivas-Ruiz F, Troya MD. Tinea incognito in children: 54 cases. *Mycoses*. 2011;54(3):254–8. doi:10.1111/j.1439-0507.2009.01810.x.
8. Kim WJ, Kim TW, Mun JH, Song M, Kim HS, Ko HC, et al. Tinea Incognito in Korea and Its Risk Factors: Nine-Year Multicenter Survey. *J Korean Med Sci*. 2013;28(1):145–51. doi:10.3346/jkms.2013.28.1.145.
9. Ansar A, Farshchian M, Nazeri H, Ghiasian SA. Clinico-epidemiological and mycological aspects of tinea incognito in Iran: A 16-year study. *Med Mycol J*. 2011;52(1):25–32. doi:10.3314/jjmm.52.25.
10. Mahar S, Mahajan K, Agarwal S, Kar HK, Bhattacharya SK. Topical corticosteroid misuse: The scenario in patients attending a tertiary care hospital in New Delhi. *J Clin Diagn Res*. 2016;10(12):16–20.
11. Romano C, Maritati E, Gianni C. Tinea incognito in Italy: a 15-year survey. *Mycoses*. 2006;49(5):383–7. doi:10.1111/j.1439-0507.2006.01251.x.
12. Rallis E, Koumantaki-Mathioudaki E. Pimecrolimus induced tinea incognito masquerading as intertriginous psoriasis. *Mycoses*. 2008;51(1):71–3. doi:10.1111/j.1439-0507.2007.01436.x.
13. Szepietowski JC, Matusiak L. Trichophyton rubrum autoinoculation from infected nails is not such a rare phenomenon. *Mycoses*. 2008;51(4):345–6. doi:10.1111/j.1439-0507.2007.01481.x.
14. Nenoff P, Mugge C, Herrmann J, Keller U. Tinea faciei incognito due to Trichophyton rubrum as a result of autoinoculation from onychomycosis. *Mycoses*. 2007;50(2):20–5.
15. Serarslan G. Pustular psoriasis-like tinea incognito due to Trichophyton rubrum. *Mycoses*. 2007;50(6):523–4. doi:10.1111/j.1439-0507.2007.01406.x.
16. Turk BG, Taskin B, Karaca N, Sezgin AO, Aytimur D. Clinical and mycological analysis of twenty-one cases of tinea incognita in the

Aegean region of Turkey: A retrospective study. *Acta Dermatovenerol Croat*. 2013;21(2):93–101.
17. Arun B, Remya VS, Sheeba PM, Kokkayil P. Mycological study on incidence of tinea incognito in a tertiary hospital. *Med Pulse-Int Med J*. 2015;2(10):649–51.
18. Dutta B, Rasul ES, Boro B. Clinico-epidemological study of tinea incognito with microbiological correlation. *Indian J Dermatol Venereol Leprol*. 2017;83(3):326–31. doi:10.4103/ijdvl.IJDVL_297_16.

Author biography

Monisha K, Senior Resident

Jagannath Kumar V, Professor and HOD

Cite this article: Monisha K, Kumar V J. Clinico-epidemiological study and microbiological correlation of tinea incognito at a tertiary care hospital. *IP Indian J Clin Exp Dermatol* 2021;7(3):212-216.